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WORLD MARITIME UNIVERSITY

Malmö, Sweden

**Analysis of the effectiveness of monitoring, control and
surveillance measures: South Africa as a case study**

by

ELSIE MORAKE

SOUTH AFRICA

A dissertation submitted to the World Maritime University in partial
fulfilment of the requirements for the award of the degree of

MASTER OF SCIENCE

in

MARITIME AFFAIRS

(MARITIME LAW AND POLICY)

2020

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Declaration

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me. The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

(Signature):

(Date):

Supervised by:

Supervisor's affiliation: Dr Laura Carballo

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Abstract

Title of Dissertation: **Analysis of the effectiveness of monitoring, control and surveillance measures: South Africa as a case study**

Degree: **MSc**

This dissertation focused on the effectiveness of law enforcement measures applicable in South Africa to deter, eliminate and prevent IUU fishing. The aim is to analyse the South African law enforcement and Monitoring, Control and Surveillance (MCS) measure's effectiveness to combat illegal, unreported and unregulated fishing (IUU). The purpose is to determine efficient ways in which fisheries management can improve the MCS measures.

In its endeavour to achieve this, the study analysed international instruments and their implementation of policies in South African fisheries sectors. Furthermore, assessed the applicable methods, whether they fulfil the international obligations of sustainability and conservation of marine living resources as well as combating IUU fishing. The study took a normative approach, as it determines appropriate decision making that will provide the desired outcome. This was achieved by analysis of previous institutional decisions regarding law enforcement of MCS measures and by a comparative analysis of Norway case.

A comparative study of Norway fisheries management was conducted to determine the best practices applied internationally. The study found that there are inconsistencies in decision making process, lack of transparency and incapacity of law enforcement measures to combat IUU fishing. The study has established that South African legislation may be improved to meet the international standards by investing in law enforcement capacity. In this process they can elect practical measures that is proven to be successful internationally.

Keywords: IUU Fishing, law enforcement, MCS, Instruments.

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List of Abbreviation

AIMS	-Africa Integrated Maritime Strategy
AIS	-Automatic Identification System
AU	-African Union
CCAMLR	-Convention for the Conservation of Antarctic Marine Living Resource
CDS	-Catch Documentation Scheme
DAFF	-Department of Environment Fisheries and Forestry
DEAT	-Department of Environment, Agriculture and Forestry
DEFF	-Department of Environment and Fisheries
EEZ	-Exclusive Economic Zone
EU	-European Union
FAO	-Food and Agriculture Organization
FCO	-Fisheries Compliance Officer
FMC	-Fisheries Monitoring Centre
GDP	-Gross Domestic Product
ICCAT	-International Commission for the Conservation of Atlantic Tuna
IMO	-International Maritime Organization
IPOA-IUU	-International Plan of Action to prevent, deter and eliminate Illegal Unregulated, Unreported Fishing Activities
ITLOS	-International Tribunal of Law of the Sea
ITQ	-Individual Transferable Quotas
IUU	-Illegal Unreported and Unregulated
LME	-Large Marine Ecosystem

MARPOL	-International Convention for the Prevention of Pollution from Ships 73/78
MCM	-Marine Coastal Management
MCS	-Monitoring Control and Surveillance
MCSCC	-Monitoring Control and Surveillance Coordination Committee
MLC	-Maritime Labour Convention, 2006
MLRA	-Marine Living Resources Act
MOU	-Memorandum of Understanding
NAFO	-Northwest Atlantic Fisheries Organization
NEAFC	-North East Atlantic Fisheries Commission
NEMA	-National Environmental Management Act
NOAA	-National Oceanic and Atmospheric Administration
PSMA	-Port State Measures Agreement
RFMO	-Regional Fisheries Management Organization
SADC	-Southern African Development Communities
SDG	-Sustainable Development Goal
SOLAS	-International Convention for the Safety of Life at Sea, 1974
SRFC	-Sub regional Fisheries Commission
STCW	-Standard of Training, Certification and Watch keeping, 2010
SWOT	-Strength Weakness Opportunity Threaten
TAC	-Total Allowable Catch
TAE	-Total Allowable Effort
UN	-United Nations
UNCLOS	United Nations Convention Law of the Sea, 1982
UNCED	-United Nations Conference on Environment and Development

UNFSA	-United Nation Fish Stocks Agreement, 1993
UNODC	-United Nations Office of Drugs and Crime
VHF	-Very High Frequency
VMS	-Vessel Monitoring Systems
VTI	-Vessel Transmitted Information

Chapter 1: Analysis of the effectiveness of monitoring, control and surveillance measures: South Africa as a case study

1.1 Introduction and Background

Fish is a critical source of nutrition and has numerous health benefits to human consumption. Globally, it has been adopted as among the highest recommended meat for protein. However, growth in demand contributes to the illegal, unregulated and unreported (IUU) fishing in all industrial, recreational and small-scale fishing. IUU affects the livelihood of communities, threatens the world food security, and the health of marine ecosystems. Furthermore, it compromises efforts made by both national and regional fisheries management to combat this IUU fishing (FAO, 2019). In a global scale, IUU fishing accounts for 26 million tonnes of fish and economical losses estimated at USD 23 billion. As such valuable fish stocks remain depleted and fishing becomes unsustainable (FAO, 2020a). Developing countries are severely affected. For instance, in the African continent it is estimated that the fisheries and aquaculture sector have a value of about USD17.4 billion, however the import and export are far less than expected, owing to IUU fishing (De Graaf & Garibaldi, 2015).

IUU fishing is either,

- i) carried out by national or foreign vessels under the national jurisdiction in waters under jurisdiction of a coastal State, without authorisation by the State or in contravention of its laws and regulations; or
- ii) Unregulated fishing conducted by vessels flying the flag of States that are parties to the relevant RFMO but operate in contravention of conservation and management measures adopted by the organization and which the States are bound, or in contravention of the conservation and management measures adopted by that organization and by which the State are bound, or in contravention of the relevant provisions of the applicable international law; or
- iii) In violation of national laws or international obligations, including those undertaken by cooperating States to a relevant regional fisheries management organization that is unauthorised according to national, or international laws (Balton, 2001).

IUU fishing encompasses every stage of fishing and various stakeholders. Furthermore, illegal fishing occurs in both the Exclusive Economic Zones (EEZs) and at high seas (van der Marel,

2019). Illegal fishing is regarded as transboundary crime and connected to crimes such as human trafficking and slavery (De Coning & Witbooi, 2015a).

The Republic of South African (SA) coastlines is characterized by the magnificent coastline and one of the most productive Large Marine Ecosystems (LME) in the world, due to the cold West coast Benguela Current and the warm East coast Agulhas Current. It has a coastline that extends to 3000km from the Southeast Atlantic Ocean including the Indian Ocean surrounding Mozambique. These coastlines have various ecosystem productivity that is beneficial to the commercial fishing sector with high valued fish and invertebrate animals. Hence, the industrial fishing companies are based in the West and East coast of Cape Town where their commercial lie (Belhabib et al., 2019).

Due to the varying composition of the LME, the SA waters require different equipment's in different locations along the coast for capture of fishes. The biggest industrial fisheries prominently harvest the inshore demersal hake trawl and the small pelagic seine fishery for fishes such as anchovy and sardine, both these sectors are situated in south west coast. The offshore sectors include a large pelagic longline fishery for tuna, shark and billfish. In Kwa-Zulu Natal (KZN) coastline, the commercial fishing sectors harvest mainly shrimp and West Coast Rock Lobster (WCRL). Also, the industry is targeted by subsistence and recreational fishers that operates in the coast (FAO, 2018).

In terms of Marine Living Resources Act (MRLA) no18, 1998 (56) defines subsistence fisher *“as a natural person who regularly catches fish for personal consumption of his or her dependents, including one who engages from time to time in local sale or barter of excess catch, but does not include a person who engages on substantial scale in the sale of fish on commercial basis”*. Illegal fishing affects all fishing sectors, however in SA abalone and WCRL commercial fishing sector for instance is mostly affected by the increase in IUU fishing and its high value in the black market leading to elements of organized crime (De Coning & Witbooi, 2015). In the year 2019, small-scale fisheries contributed about R3 billion to the economy and about 15,000 jobs were created (Ndlangamandla, 2020).

In 1994 South Africa became a democratic country, after historical exclusion of people of colour in economic participation. The 1996 South African Constitution provided basic human rights and this was followed by drafting of legislation that required inclusion of participation

of every South Africans. This period between 1994-2004 was a transitional period for the country and it included fishing industry transformation. The coastal communities hoped for change in the form of fishing rights allocation to fishers who “fished for own use or non-commercial profits” and in some instance licenses were unnecessary if no bag limits were exceeded, however fishing for personal use was not defined (Hauck.M & Sowman, 2001) This process of new policies was challenging period and involved organized labour disputes (Sowman et al., 2014).

To address these issues, MLRA was adopted with underlying principles as envisaged by the Constitution based on equality, sustainability and economic stability. However, there was a contention raised towards allocation of rights to undeserving holders. The rights were allocated to big industrial fishers, which left new entrants with no hope, the process was seen as failing to address the “socio-economic and cultural needs of poor fishers and communities”, however, this individual rights allocation have been seen as failed in policy transformation (Raemaekers, 2009).

Fisheries are managed through the quota system determined annually together with fisheries administrators with scientific recommendations by means of Total Allowable Catch (TAC) which provides the limit allowed to fish and the Total Allowable Effort (TAE) which provides the time it takes for provides the limit allowed to fish and the Total Allowable Effort (TAE) which provides the time it takes for catches. Prior to adoption of MLRA abalone fishing was harvested by anyone without restrictions or control. The purpose is to limit overexploitation of fish stocks (Morgan, 2001).

Nonetheless, South African fisheries management is commanded by the local and international community as being effective based on the efforts to meet the globally best practices. This includes “progress in implementation of responsible management in accordance with an ecosystem approach and principles of optimum utilization, ecologically sustainable development of marine living resources and conserve these resources for future generations” (Cochrane et al., 2020). However, this progress is overshadowed by the continual poaching of for instance, Abalone (*Haliotis midae*) and West Coast Rock Lobster (WCRL) (Branch & Clark, 2006).

However, the fisheries management decisions not to adhere to scientific recommendations contradicted its objectives of sustainability and conservation of marine living resources for the future. This issue was a point of litigation in the case of “*WWF South Africa v the Minister of Agriculture, Forestry and Fisheries and others*” (Rajah, 2019).

This study focuses on the national law enforcement measures and the capacity to combat IUU fishing in the South African fishing sectors. Furthermore, it analyses the Monitoring, Control and Surveillance (MCS) measures applicable in South Africa and the effectiveness thereof. The case of Norway as a major fishing nation will be analysed in order to establish best practices applied in that country to combat IUU fishing (Attard et al., 2014).

Following the above perspective, monitoring the marine resources by means of enforcement of national laws and regulation of international agreements fisheries such as the 1958 Convention on Fishing and Conservation of the Living Resources of High Seas, adopted and the 1967 Convention on the Conduct of Operation in North Atlantic thereon set standards for its members to promote good order while at sea.

Regionally, the African Union (AU) through Africa Integrated Maritime Strategy 2050 (AIMS-2050) took cognisance to address IUU by providing guidelines as follows. To “*deter IUU fishing activities, sanctions of sufficient gravity as to deprive the offenders of the benefits accruing from their illegal activities*” shall be put in place as per the 2005 Rome Declaration on IUU Fishing, which might include seizure of assets and prosecution, with the most stringent stand for compensation. All Member States are accordingly encouraged to report any IUU fishing activity to the AU for supplementary stringent dissuasive actions through all available channels deemed appropriate” (Negm, 2012). African Union (2012) in his document stated and agreed to adopt the following measure to deter IUU fishing

- 1) “*Effective licensing and control of vessels allowed to fish by Flag States;*
- 2) *Real-time positional reporting by licensed vessels via Vessel Monitoring Systems (VMS);*
- 3) *Surveillance and interception of irresponsible fishing by on-water patrols;*
- 4) *Implementation of technical regulations for the safety of non-convention fishing vessels; and Promotion of effective Flag State implementation in a broader context through the enforcement of RFMO measures, such as ‘white’ or ‘black lists’ to identify ‘bad actors’*”

1.2 Problem Statement

IUU fishing is happening in all fishing sectors in South Africa. For example, prevalence in poaching of abalone due to its high value has led to an 88% decrease in the total allowable catch (TAC). The international approach to combat IUU fishing is based on a combination of compliance with regulations and law enforcement. However, this approach has apparently not yielded results in South Africa where the figures keep increasing, even though these illegal activities have been reframed as organized crime (De Coning & Witbooi, 2015). South Africa has lost billions of rand to illegal fishing activities and poaching (Phakathi, 2019).

The increase rise of IUU fishing deprives the communities that depend on fish of their livelihood, impairs economic prosperity and triggers the unsustainability of fish stocks.

1.3 Aim and Objectives

The aim of the study is to analyse the international legal framework on fisheries protection and the legal measures taken by South Africa for the same purpose. While the latter is a robust regime, the effectiveness of law enforcement measures and the capacity of MCS measures to deter, eliminate and prevent IUU fishing in South Africa, needs to have a closer view of the increasing figures of this crime in the country. The examination is urgent as IUU fishing does not only pose an environmental threat to South African marine ecosystems, but also to the socio-economic structures of the country. Particular attention will be paid to artisanal fishing to the extent that fishers in this sector rely on fishing not only to secure their livelihood, but also their food security.

1.4 Research questions

In order to achieve the objectives of this dissertation, the research will interrogate the following questions:

1. What is the legal framework to combat IUU fishing and what compliance and enforcement measures can be used in this fight?
2. How effective are the enforcement measures in place in South Africa?
3. What are the reasons why the available enforcement measures to combat IUU fishing are not effective in the South African context?

1.5 Research Methodology

A research methodology is the technique used to select, identify, and analyse information about a topic. This allows the researcher to critically evaluate study reliability and validity (Witwatersrand University, 2020). The method used in this research is qualitative, and primarily the legal dogmatic method will be employed. To this end, the dissertation has analysed international and national primary sources as produced by the international organizations that are operative in the fishing sector, as well as analysed the South African national legal framework and fisheries management. Extensive analysis of South African journals in the theme of IUU fishing will further provide in this dissertation the basis for fisheries management and IUU fishing.

Norwegian fisheries management and law enforcement measures is also analysed as the study has also resorted to a comparative analysis of law taking Norway as a major fishing country as model to learn lessons that might help to enhance the fight against IUU fishing in South Africa. Secondary sources employed in this dissertation are mostly academic literature on the topic that has been complemented with available data gathered from reports issued by international organization, such as the Food and Agriculture Organization (FAO) and South African World Wildlife Forum (WWF).

1.6 Overview of Dissertation

The dissertation is organized into following six chapters:

- a) Chapter 1 deals with introduction of fisheries sector and the significance of it in South Africa. Furthermore, problem statement highlights the underlying issues of IUU fishing and includes aim, objective of the study and research questions.
- b) Chapter 2 focussed on the international instruments as provided by the UN Food and Agriculture. Furthermore, implementation of these instruments to deter, eliminate and prevent IUU fishing.
- c) Chapter 3 analyses South African legal framework by focusing on how marine living resources are regulated. By focusing on Marine Living Resources Act (MRLA) and National Environmental Management Act provides the underlying principles to regulate the use, access and exploitation of marine resources in a sustainable and

conservation of ecosystem for the future. Furthermore, assesses the fisheries sector is regulated to deter IUU fishing.

- d) Chapter 4 focusses on the analysis of MCS measures in South African perspective and also looked at the capacities of fisheries inspectors, cooperation of State agencies in operations to combat IUU fishing and the involvement of non-State agencies particularly in combating IUU fishing.
- e) Chapter 5 focusses on analysis of Norway as a chosen study, and the focus is on processes and implementation of MCS measures in fisheries management.
- f) Chapter 6 conclude briefly the main issues of this study and recommendations to improve the challenges.

Chapter 2: Analysis of International Legal Instruments on Illegal, Unregulated and Unreported Fishing

2.1 Illegal, Unreported and Unregulated fishing (IUU) as defined by FAO

IUU fishing is defined as unauthorised fishing occurring within the national waters of a Coastal State by either citizens or foreign fishing vessels in contravention of the laws and regulations of the State.

NOAA (2020) refers to Unreported fishing as “fishing activities that are not reported or those been misreported” contrary to the national laws and regulations.

Unregulated fishing includes unregistered fishing vessels flying the flag of a country not party to Regional Fisheries Management Organisations (RFMOs) and may also be linked to organized crimes. That includes fishing in the marine protected areas, where State has a duty to comply with international laws (FAO, 2002).

The 1982 United Nations Convention on Law of the Sea (UNCLOS), which came into force in 1994, forms a foundational international legal framework for fisheries management. IUU fishing became prominent internationally during the 1990s due to the depletion of fish stocks. However, it was not until 1997 that the reference of IUU fishing was used during the Commission of the Conservation of Antarctic Living Marine Resources (CCAMLR). During the CCMLR commission, numerous instruments were developed for States as solution to deterring IUU fishing. The consequence of IUU fishing is its potential to destruct the management of fisheries and undermine the conservation of fishing resources for the benefit of societies and economies (Swan, 2004).

The international organization responsible for food security and marine living resources is the Food and Agriculture Organisation (FAO). In order to deter, eliminate and prevent IUU fishing, FAO takes advantage of both hard and soft law instruments in various ways. These instruments include the FAO 1993 Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on High Seas; the 1995 Code of Conduct for Responsible Fisheries; the United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea UNCLOS of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks of 1995 and Code of Conduct for Responsible Fisheries and the International Plan

of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unreported fishing (IPOA-IUU)(De Coning & Witbooi, 2015b).

2.2 Implementation of the Fish Stock Agreement and other compliance agreements

In realisation of the over-exploitations of fishing causing the decline of fishing stocks, the 1958 Convention on Fishing and Conservation of the Living Resources of the High Seas was adopted and came into force on 20 March 1966. This Convention sought international cooperation to properly manage high seas' fish stocks (Zacharias & Ardon, 2020). Fishery products provide significant health benefits; thus, the consumption of fish has increased, reaching a record high of +122% in 2018 (FAO, 2020b). Although there has been an improvement in fishing stocks, it has been overshadowed by the prevailing IUU fishing activities (FAO, 2020c).

Although UNCLOS has long been in existence, no provision was made to prevent diminishing of valuable fish stocks in South Africa. Article 116 thereof makes provision for State to participate in exploitation of the marine resources and its Article 117 places responsibility on the State to adopt measures that protect the marine resources. Based on the latter, the State may develop a national legislative framework that incorporates these provisions to gain control over marine living resources. In the 1992 United Nations Conference on Environment and Development (UNCED), the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the sea of 10 December 1982 Relating to Conservation and Management of Straddling Fish Stocks Agreement and Highly Migratory Fish Stocks (UN Fish Stocks Agreement) was concluded to provide duties on how to maintain control of fish stocks and includes the use of MCS measures. (Flewwelling et al., 2003).

Noting the complexity of tackling IUU fishing, the UN Fish Stocks Agreement is underpinned by the principle of cooperation with other States. However, what a RFMO is, is not explicitly defined in this Agreement. A RFMO serves as a legal basis for the conservation and management of resources to achieve good order at high seas (Harrison, 2019). Whilst considering the effective mechanisms for compliance and enforcement, the agreement considered the dynamics of developing States to conserve and manage fishing stocks (UN, 2019). Another challenging issue for fisheries management is the enforcement by the flag States of their legislations when citizens and companies are fishing outside the national

jurisdictions, particularly, when they reflagged their fishing vessels in an attempt to evade national laws. (Palma et al., 2010).

Flag States are required to maintain control of the fishing vessels flying their flags. Vessel owners may register under a Flag of Convenience (FOC) and target States that have weak governance structures and lack monitoring resources. Moreover, some States are not party to RFMOs notwithstanding that such fishing vessels may fish at high seas with no consequence of the law. Particularly, where destructive fishing gears is used, this impacts negatively on the healthy ecosystems of the ocean. Additionally, as the illegally harvested fish is not accounted for, this conduct obstructs the maintenance of fish stocks (PEW, 2013).

2.3 Analysis of Monitoring, Control, and Surveillance (MCS) instruments to combat IUU fishing

Illegal fishing is recognised as a transnational crime as it can take place beyond national jurisdiction. IUU fishing is challenging to manage, particularly at high seas as it involves various stakeholders, such as fishing vessel of owners in a foreign country. Furthermore, IUU fishing compromises the management of fishing at high seas in particular, by fishing vessels that are Stateless or flying flags of States that are not signatories to RFMO. Thus, a stringent law enforcement and regulatory compliance system is required (Boeder et al., 2018).

Transshipment of catches at high seas even though is not illegal, provides an opportunity for concealment of illegal catches by mixing it with a legal one and consequently leading to misreporting of catches. Therefore, it is required that international and regional cooperation are sought by States to sign RFMO and share data on infringements. Furthermore, States are under obligation to adopt measure that deters IUU fishing. Unfortunately, the majority of developing States impacted with IUU fishing lack sufficient resources to enforce the laws and implement MCS measures (Flewwelling, 2002).

These instruments are under the umbrella of 1995 Code of Conduct for Responsible Fisheries, and includes, the 1993 Agreement to promote compliance with 'International Conservation and Management Measure by Fishing Vessels on the High Seas' also known as (FAO Compliance Agreement).

The IPOA-IUU is a measure to encourage States to systematise the registration of fishing vessels to achieve efficiency of MCS measures. This implies that the State should adopt legislation providing mandatory use of MCS tools (FAO, 2006). However, IPOA-IUU is

voluntary in nature and this requires States to proactively cooperate with other States. Regrettably, not making it mandatory allows States that are not party to RFMO an option not to prioritize enforcement of MCS measures. Additionally, other developing States such as Angola and Tanzania to name a few have implemented MCS measures but success has been minimal (Sjostedt & Sundstrom, 2013).

2.4 Challenges of Implementation Plan of Action to Prevent and Deter Illegal, Unregulated and Unreported fishing (IPOA-IUU)

IPOA-IUU encourages States to systematise the registration of fishing vessels to achieve efficiency of MCS measures. This implies that the State should adopt legislation providing mandatory use of MCS tools (FAO, 2006). However, as alluded to earlier, IPOA-IUU is voluntary in nature and this requires States to proactively cooperate with other States (Sjostedt & Sundstrom, 2013).

IPOA-IUU is a non-binding instrument that provides guidelines for States to deter, eliminate and prevent IUU fishing. Following the adoption of IPOA-IUU, it is incumbent on States to incorporate fisheries conservation and management measures into the national legislation or regulations. The purpose of IPOA-IUU is ensured by providing measures that flags States can adopt, such as fishing vessel identification and marking fishing gear.

Additionally, flag States should provide fishing vessels licenses, certification or fishing permits, Vessel Monitoring Systems (VMS). And they should also lay down penalties that should be severe in order to deter IUU fishers from repeating the crime. Furthermore, IPOA-IUU sets out guidelines for coastal State to effectively handle nationals participating in IUU fishing activities, by enacting legislation that sanctions non-compliance by fishers or beneficial owners (van der Marel, 2019).

This IPOA-IUU instrument concerns itself with illegal fishing activities occurring at high seas. The challenge of fishing at high seas where no regulations are imposed is that fishers apply methods that are harmful to health of marine resources such as overfishing and habitat destruction of marine life caused by the human activities. Habitat destruction result from direct removal of habitats, including from fishing practices like bottom trawling.

Often, flag States are unable to prevent IUU fishing particularly at high seas as it may be disguised by other activities. That poses challenges to flag States to discharge their responsibilities to combat IUU fishing. Nonetheless, flag States have an obligation to enact

laws that set out measures that enforce law and comply with regulations. This was emphasized in the International Tribunal of Law of the Sea (ITLOS) case of *South China Sea* that required conducting verifications of fishing vessels, in particular, at the time of registration to ensure that such fishing vessels are not involved in IUU fishing (van der Marel et al., 2019). The comprehensive records and details of fishing vessels flying a flag of that particular State permitted to fish at high seas must be maintained according to the FAO Compliance Agreement (Sidik, 2008).

Accurate record keeping enables FAO Compliance assessors to detect violations and malpractices in the system. While the IPOA-IUU measures can be implemented by States in their national legislation framework, the reality is that many developing States lack capacities and resources to combat IUU fishing. IPOA-IUU includes fishing that is not compliant with RFMO by fishing vessels that are registered under flags States who are not members to RFMO (van der Marel et al., 2019). Due to the global connectivity, States have voluntarily become members to RFMO to protect shared interests such as conserving marine living resources and deriving economic benefits. This has a positive impact in the management and governance of regional fishing resources (Molenaar & Caddell, 2019).

The UNCLOS article 94(1) provides that every State shall effectively exercise its jurisdiction and control in administrative, technical and social matters over ships flying its flag. UNCLOS acknowledges the sovereignty of States to derive the economic benefits of the exploitation of marine living resources under the national jurisdiction. Therefore, coastal States bear the burden of conserving and managing the resources in a sustainable manner.

Coastal States are responsible for adoption of measures to prevent IUU fishing within the 200 nautical miles, i.e. the Exclusive Economic Zones (EEZ). An array of fisheries management issues is discussed in Article 7(1) of FAO Code of Conduct. This implying that the State legislation and policies be capable of ensuring sustainability of marine resources, for instance, may use fishing licences or employment of scientific fishing observers and inspection schemes or instruments that are legally enforceable documents are among MCS measures available for implementation (FAO, 2002).

2.5 Agreements on Port State Measures to Deter and Prevent Illegal, Unregulated and Unreported Fishing (PSMA).

Prior to the adoption of the 'Agreement on Port State Measures To Prevent, Deter And Eliminate Illegal, Unreported And Unregulated Fishing' (PSMA), the existing agreements such as UNCLOS, 'United Nations Convention in respect of Conservation and Management of Straddling Fish Stocks of 1982' (UNFSA) and the 'FAO Agreement to Promote Compliance with International Conservation Management Measures by Fishing Vessels on High Seas' (FAPCIC) were only concerned with jurisdiction of flag State over fishing vessels used at high seas (Kuemlangan, 2010).

IMO as the safety standard regulator has also made provisions indicating that States have to conduct inspection on foreign merchant vessels in ports to ensure safety and elimination of pollution through a regime called Port State Control. However, no emphasis was made in a similar manner on fisheries.

To address this lacuna, on its 36th Session of FAO Conference PSMA was adopted as a legally binding instrument in contrast with other existing soft laws. The PSMA provides a standardised mechanism for port State to vet access of foreign fishing vessels through conducting of inspections, review fishing permits and access ship records. Furthermore, PSMA establishes a global record of fishing vessels, refrigerated transport vessels, and supply of vessels. The global record enables States to share information and captures of fishing vessels that committed IUU fishing (UNGA, 1995). The PSMA review the ship paper, carry out survey of fishing gears, examine the catch and ships records are checked.

Fishing vessels may not necessarily be concentrating its activity in a particular region; therefore, PSMA seeks cooperation among global and regional organizations to control imports and exports of illegal catches by requiring catch documentation at ports or denying entry where there is reasonable suspicion of fishing vessel that has engaged in IUU fishing (UNGA, 1995).

2.7 Complexities of Illegal, Unregulated and Unreported (IUU) Fishing

IUU fishing is a global issue that can potentially collapse the regulatory methods and pose a real threat to sustainable marine living resources. States experience IUU fishing in various ways; however, the main impact is experienced in the small-scale fishing sector (Glaser, Roberts, & Hurlburt, 2019). Furthermore, the compliant States endure economic losses due to the unscrupulous nature of illegal fishing schemes determined to use the corporate veil in order

to evade accountability. Because of the fluidity in which IUU fishing takes place, many complying States are not aware of the illegal fish consumed in their States. Hence, monitoring systems are important and States are required to be vigilant to activities taking place at sea. Where there has been violations of law enforcement and regulations then appropriate system should be in place to respond.

The fishing market has increased exponentially in modern society. The global production of fish between 1990 and 2018 is at 527% and consumption for the same year period is at 122% to 4.5 billion of the world population (FAO, 2020). Fishers take advantage of loopholes such as lack of monitoring capacities and regulatory systems versus incentives received from the illegal activity to decide whether engaging in IUU fishing is a profitable activity or not. When sanctions are laid down in national legislation, the major issue undermining the fines being imposed for IUU fishing is that they are very low (Sumaila et al., 2006). Furthermore, compounding issues regarding how fishers are remunerated at national level influences the temptation of engaging in the illegal activities.

Literature shows that fishing vessels owners tend to prefer fishers from poor States where income is not competitive which is a major contributory factor. Additionally, on the national sphere, industrial fishing, small scale fishing or artisanal fishing compete for the same overexploited available fish (Luomba et al., 2016). IUU fishing is a very low risk and cost-effective way of continuing supply of low-income countries. This also generates employment, food security and supply of protein for a low-income country.

IUU fishing has been classified as a transnational crime by United Nations Office of Drugs and Crime (UNODC) as it relates to the multifaceted crime activities linked to IUU fishing. Illegal fishing can be eliminated where there is compliance with regulations in place and applicable MCS mechanisms.

The vessels registered under Flag of Convenience provides a challenge to detect, and IUU fishing capitalises on loophole of States that lack MCS measures. Deterrence by means of imposing penalties are not severe enough or no sanctioned, neither it is the consistency in blacklisting fishing vessels as they find other means of operating under a different flag (Doubouya et al., 2017). Although there are many successes of FAO instruments to combat

IUU fishing, there are gaps in systemisation of implementing MCS mechanisms globally, regionally and at national level.

The State response to MCS system varies, as mostly it is dependent on available enforcement measures pertaining to that State (Sjostedt & Sundstrom, 2013). The governance of fisheries department would be efficiently managed when implementing law enforcement measures, that stakeholders' input is considered by fisheries management. Thus, convening workshops can provide a platform for managers and fishers to exchange information about IUU fishing management and challenges experienced. (Luomba et al., 2016). The cooperation within the region and its resourcefulness are opportunities that could be leveraged. However, this lacuna provides an opportunity for illegal fishing activities to continue.

2.8 Conclusion

The FAO instruments on IUU fishing are well established to eliminate and deter IUU fishing. There are many complexities in the administration and implementation of available measures. Soft and hard law show the efforts and commitment by the FAO to encourage global community to adopt measures that will protect environment and conserve the ecological system in a sustainable manner. However, for the success of these instruments, FAO depends on their voluntary adoption and implementation by member States. Furthermore, cooperation at the regional level is required to effective enforcement of non-member State compliance.

Chapter 3. South African Legal Framework

3.1 Introduction

South Africa has a coastline with a length of 3,623 Km, covering the Orange River in the West of Namibia to the East in Ponto de Ouro in the East of Mozambique. The management of fisheries and coastal management corresponds to the Department of Environment, Forestry and Fisheries (DEFF).

The fishing ecosystem is distinct in nature and the coastline is irregular¹. In the effort to effectively manage fishing resources in the international waters, South Africa has implemented MCS measures. South Africa is also a member of various RFMO such as the International Commission Conservation of Atlantic Tuna (ICCAT) the Indian Ocean Tuna Commission for the Conservation of Southern Bluefin Tuna (CCSBT)², and the South East Atlantic Fisheries Organization (Nkwanyana, 2019) in cooperation with the Southern African Development Community (SADC) that has also endeavoured to combat IUU fishing (Sjöstedt & Sundström, 2013). South Africa is obliged by the international organisations to which it has ascribed to find solutions that sustainably conserve the environment (Tilney & Purves, 1999).

Figure 1. shows the South African Institutional Framework and where the departmental authority lies.

¹ United Nations Food and Agriculture Organization (FAO) Fishery and Aquaculture Country Profiles: The Republic of South Africa, available at [http://: www.fao.org](http://www.fao.org) accessed on 11/08/2020.

² United Nations Food and Agriculture Organization (FAO) Fishery and Aquaculture Country Profiles: The Republic of South Africa, available at [http://: www.fao.org](http://www.fao.org).



Figure 1. South African commercial fishing institutional management framework. Source : (Tanci, 2009)

3.2 Marine Living Resources Act of 1998

More than a decade ago, the South African fishing administration landscape started developing and continued to evolve through the years. The South African Constitution Act no 108 (1996) provides rights to exploit and access the natural resources to all South Africans. Furthermore, MLRA was amended to effect changes as published in the 1997 the Marine Fisheries White Paper. Following extensive negotiations with the industrial fishing sector, stakeholders and previously marginalized communities, the Marine Living Resources Act, 1998 (MLRA) was enacted and amended in 2014 (Sowman et al., 2014). It is based on the principle that the past injustices should be considered and rectified while observing measures that are non-discriminatory. This implies inclusive participation of traditional also known as artisanal or subsistence fishing in the fishing sector and those fishing communities living around the coast and fishing for non-commercial purposes.

Pursuant to fulfilling the objectives of the Constitution as provided, through publication of the White Paper for Sustainable Coastal Development in South Africa in 2000, the changes were effected in the MLRA and the Act was followed by adoption of Small-Scale Fishing (SSF) adopted in 2014 (Witbooi, 2006). Small-scale fisheries, artisanal or traditional fishers are common names used to describe communities living along the coastal States that depend on fishing for livelihood and other activities such as spiritual practice (Sowman & Hauk, 2005).

Despite the milestones achieved by MLRA, particularly on the recognition of small-scale fisheries, transparent processes in allocation of fishing rights are still lacking.

Traditional fishers have long existed and harvested intertidal resources along the coast prior to the adoption of MLRA. However, due to policy and institutional arrangements in the 1990s they were not recognised but marginalized and denied access to fishing resources. Artisanal fishing was managed under the Provincial Nature Conservation legislation and had less formal management and control than MLRA, as permits and fishing licenses were allocated informally. Accordingly, the communities continued to engage in fishing pending the implementation of MLRA without complying with the new requirements as they were unaware of them (Hauck & Sowman, 2001). Furthermore, artisanal fishers grew frustrated by unclear processes of implementation of the SSF policy (Sowman, 2006).

3.3 National Environmental Management Act no 107 of 1998

In the Preamble of the National Environmental Management Act 107 of 1998 (NEMA), it is provided the fundamental principle of collaboration with the communities on sustainable resources, which requires the integration of both social and economic planning and evaluation of decisions that will benefit future generations³. Yet, overexploitations of fishing resources continue unabated. Illegal fishing activities have been widely reported in the 1990s (Minnaar et al., 2018) in particular the illegal fishing of abalone (*Haliotis midae*) and the West Coast rock lobster fishing. These species are vulnerable because of easy accessibility of the inshore area by all fishing sectors, namely commercial, small scale and recreational fishing sectors, and they are of high economic value. To sustain and manage fish resources, the TAC and TAE scientific measures are applied to monitor and assess the trends of fishing stocks (Cochrane et al., 2020).

Besides the national measures taken to achieve conservation of marine living resources, South Africa has entered into regional agreements, such as the Convention for Cooperation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region and Related Protocol of 1984, the Convention for the Protection, Management and Development of the Marine and Coastal Environment of the East African Region and Related Protocols of 1995, and the South African Development Community Fisheries Protocol (SADC) of 2003 (SADC, 2006).

³ National Environmental Management Act no.107 of 1998.

The responsibility of marine resource management is under the Marine Coastal Management (MCM) department. Their chief responsibility is the management of coastal areas, and conserving marine living resources in the Exclusive Economic Zones (EEZ) in a sustainable manner.

As alluded above, that successful management of marine resources will be best achieved, where the society is involved, and government partners with stakeholders to create an inclusive, transparent accountability. This cohesive concerted effort may prove successful in achieving a sustainable coastal planning and marine management (Hauck & Sowman, 2005).

There are different views in terms of the challenges faced in the MCM area. At the departmental level, lack of capacity of competent authorities, insufficient skilled human resources personnel and lack of MCS measures are held to be the issue. Budgets constraints to use marine scientists is seen as another problem (Cochrane et al., 2020).

3.3 Fishing in South Africa

3.3.1 IUU fishing in the industrial sector

In the South African fishing sector, the primary issue has been pinned on the institutional systematic failure to effectively prevent, deter and eliminate IUU fishing. Non-compliance of regulations is rampant in the fishing sector, and the consequence is that it is leading to failure to sustain healthy fishing stocks. The Minister establishes Quotas which provide allowable TAC and TAE (Hauck.M & Sowman, 2001). Despite it being regulated, most of the fish stocks remain depleted. The Quota Board was appointed in 1998 for the purpose of allocating fishing rights. Prior to democracy, fishing rights were allocated to a minority of white companies. However, many issues were raised during this period, such as exclusion of legitimate beneficiaries, individual rights' allocation process which was not transparent and long-term rights' allocation that benefited large fishing industry (Sowman et al., 2014).

The fishing industry opened up for everyone after 2004 and these administrative processes were challenging, in particular when it came to handle all the applications made of which some were rejected. These processes exposed implementation weaknesses in the administration management of fisheries (Kleinschmidt et al., 2010). It was during this time that poaching and under reporting of daily catches gained momentum (Hauck & Sweijd, 1999).

The obvious gaps as identified in the fisheries management were the following according to Cochrane (2015): *“the need to revise the MLRA to incorporate requirements for open and transparent; management and governance; 2. Entrench the principles of co-management, emphasised in the Act and the Policy for the Small-Scale fisheries Sector (SSFP), for all fisheries; and 3. Include a detailed legal requirement for detailed management plans for all fisheries”* (Cochrane & Joyner, 2015).

Unfortunately, until to date, those issues still exist. Effective MCS measures dealing with the influx of the entrants to comply with regulations and law enforcement is lacking.

Notwithstanding that, success of effective MCS measures were once experienced in the period between 2003-2004, when MCM structures had capacity and resources were allocated to meet the objectives, and further, the environmental court was operational to deal with the backlog of marine cases. The successful rate of the environmental court was at 70% and this strengthened MCS measures (Sjöstedt & Sundström, 2015).

MCM's funding constraints have seen scientists with overextended duties that are not in line with their mandate. In particular, these circumstances affect the capacity of fishing inspectors and officers as their duties extend to overtime. To monitor and assess fish stocks, a scientist is required to board fishing vessels, to conduct verifications of the daily catches as well for research and marine resource conservation purposes. In responding to these challenges, the MCM provides a scientific observer scheme towards surveillance of fishing vessels by boarding of these vessels to inspect. However, a scientific observer is not operational due to the budgetary constraints of DEFF (Cochrane et al., 2020).

In cooperation with the Navy when conducting patrols, fisheries inspectors form part of the crew on the naval vessel. However, the activity of fishing inspectors has not had substantial success in effecting change to combat IUU fishing, due to inefficient methods of record keeping. It would be beneficial to have a scientific observer as the scientific observer's program provides a better resource management tool, as methods used are capable to record fishing vessel catches and conduct verifications of fish stocks captured whenever applying TAC methods. Moreover, they contribute to the decision making in determining allowable quotas with other stakeholders. The fishing records and logging books can serve as credible evidence in court (Donlan et al., 2020).

3.3.2 IUU fishing in the small-scale fishing sector

A majority of small-scale fishers depends on fish for their basic needs and economic prosperity. Fishing management resources have been on a decline, as a result of two-thirds of fish being over-exploited⁴. Small-scale fishing and artisanal fishing are both characterised by words such as sustainability and traditional methods of fishing, thus small scale and artisanal is used interchangeably. Small-scale fishing must be understood from a historical perspective that has influenced the embracing of the rights of artisanal fishers.

To gain perspective, the minister appointed a Subsistence Fishery Task Group (SFTG) in 1999 to explore the context in which small-scale fishing can be understood. Branch (2002) stated that *“small-scale commercial fishers were defined as a distinct component that has not received adequate attention and for whom specific management plans need to be made”*. A substantial success of MLRA implementation is considered to be the recognition of small-scale fishing and the adoption of a policy that embraces human dignity, attempts to address the underlying socioeconomic issues to the sector and seeks poverty alleviation (Sowman et al., 2014). However, small-scale fisheries have many compounding issues that have to be considered in order to properly regulate them.

As a policy that advocates for inclusion based on the right to access and exploit natural resources to ease poverty and economic prosperity, MCM must strike a balance between these rights and law enforcement. The government has the complex task at hand of legitimizing the enforcement measures in order to save marine resources for future generations as envisaged by the MLRA and other international regulations. The broken trust in the relationship between the government and the traditional fishers makes the latter doubt the legitimacy of Fishery Control officers (FCO) when conducting inspections. The fisheries sectors transformation process that took place created the hope that regulations will be favourable to the previously marginalized (Norton, 2015).

The FCO are a contingent within the branch of MCM empowered by the Criminal Procedure Act (CPA) no 51 of 1977. Their duties include fisheries inspection, verifying logbooks, data recording and patrols. Furthermore, they are known as peace officers and authorised to conduct searches on fishing vessels. There were challenges in the allocation of fishing rights to the beneficiaries, as the government could not identify legitimate beneficiaries of small-scale

⁴ South African Government. Available at <http://www.gov.za/aboutsa/fisheries-legislation>. Accessed on 11/08/2020.

fisheries, and long-term contract permit holders felt threatened by the attention given to small-scale fisheries what exacerbated the tension between these industries.

There are many successes of adopted policies to achieve MLRA objectives, but they have been overshadowed by the constraints of management resources that have deteriorated with time. Regardless of the efforts of inclusion being made by the administrators, the challenges of poverty alleviation intended to be resolved by the small-scale fishing policy are yet to be addressed.

3.3.3 The Impact of IUU fishing in South Africa.

Generally, illegal fishing impacts the sustainable conservation of fishing resources and the maintenance of a healthy ecosystem. IUU fishing hampers the socioeconomic development and puts limits to economic participation. Illegal fishing activities occur within and outside national jurisdiction, including identified marine protected areas, and therefore impact on the recovery of fish stocks. Unfortunately, most of South African fish stocks are depleted or below acceptable recovery. From a South African perspective, fish is not a dependable source of food security except for the small-scale and artisanal fisheries. Of importance, it provides employment opportunities in fish processing (Sjöstedt & Sundström, 2013).

Unmonitored fishing methods have the potential of destroying fishing habitats and production. However, where appropriate, methods of fishing are applied, i.e. “size limits, quotas, bag limits, gear restrictions, closed seasons and limited entry”, that may assist in the maintenance of healthy harvests (Bohnsack, 1996). In Africa, the marine fisheries sector contributes “15 billion USD dollar and 0.70%” of the GDP of all African countries, but unfortunately this has not been translated to economic benefit for Africa (Torell et al., 2020).

There are South African fishing vessels that operate outside the EEZ, and South Africa is a member to RFMOs and signatory to CCAMRL and there bound by the ICCAT and CCBST Convention. At regional level, South Africa shares the Large Marine Ecosystem (Benguela Current). In this area, fishing is targeted for recreational activities that are responsible for the destruction of fishing species because fishing activities are barely monitored, consequently there has been under-reporting because of lack of effective governance and corruption.

There is effort shown in Africa’s inshore areas to combat IUU fishing, for instance Fish-I-Africa was instrumental in the arrest of the 3 internationally most wanted fishing vessels that were ultimately backlisted (Belhabib et al., 2019) Non-Governmental Organizations (NGO)

such as Fish-I-Africa and Oceans beyond Piracy play a pivotal role (Belhabib et al., 2019). The above issues are directly related to the failure of MCS measures that are not effective. The fishery legislative framework of South Africa has developed in the past decade; however, the objectives of these legislations and policies to effect change in society and environment are yet to be met. This policy aspiration may be attained provided that there is an improvement in the departmental arrangements and resources that can be invested in the above-mentioned technology to enhance the MCS issues.

3.4 Implementation challenges of South African legislative framework.

South African legislative framework has been expanded to include access to marine living resources for all South Africans by the amendment of MLRA, subsequently SSF policy was drafted to address the existing lacuna. However, during the implementation process, there was no clear identification of small-scale fishers, due to the informal management style of permits employed prior to the MRLA. Other challenges include unclear utilization of resources by small-scale fishers.

Small-scale fisheries definition provides that they can consume or sell the excess captured as they generate low income. This selling of resources overextends to commercial sector resources as a result contributing to the diminishing of fishing resources (Harris et al., 2002). Furthermore, during implementation of small-scale fisheries, permits were granted to artisanal fishers, however, administrators could not verify the actual beneficiaries.

The institutional structures of fishing governance changed numerous times since 2002 from Department of Environment, Agriculture and Tourism (DEAT); Department of Agriculture, Forestry and Fisheries (DAFF) and currently Department of Environmental, Forestry and Fisheries (DEFF). These changes disrupt the stability of management and potentially hamper policy decision making, particularly in key positions during this transition. This implies that decision taken during transformation may be changed or understood differently by the new management. The rapport with stakeholders is also lost as such relationships has to be newly established (Kelly et al., 2019). As a result, fisheries deploying monitoring systems in place may not be accurate because of lack of officials from the Marine Coastal Management Department. Moreover, there is an increased mistrust between observer scientists and officials because of corruption that has infiltrated the area of MCM ((Cochrane et al., 2020).

3.5 Conclusion

The MLRA and NEMA conform the critical legislative framework of the marine living resources and seek to ensure the conservation of marine living resources in a sustainable manner and accessible to all South African citizens. The underlying principle is to have a community-based approach in the coast to improve the livelihood of the fishing communities. Research has proven that efficient and integrated management in a structured process has inclination to produce collaboration between stakeholders and communities. While there are successes in implementing policies that respond to issues identified in the enactment of legislation, there is also a lack of synergy in enforcement and compliance of these regulations, as witnessed by an increase of cases of illegal fishing. This has raised a lot of hostility in the relationships of management and fisheries sectors in that these regulations are not applied in a fair and just manner for those whose lives depend on it. Rebuilding of trust between authorities and the fisheries sectors to effectively participate in the marine economy is imperative to improve the livelihood of the community and the productivity of marine living resources. Inclusion of the community in decision making, for instance, in management of resources and fish stocks should be a concerted effort between the communities and institutions. If fish stocks are preserved and institutions are transparent in their dealings to earn their trust, that could have a positive impact to encourage compliance with the regulations by the fishing sectors.

A clear and unambiguous institutional legal framework provides standard guidelines that are achievable, and that mitigate the opportunity of illegal fishing activities to take place. That includes the role of scientific researchers that work with institutions determining the TAC and TAE. If their purpose is understood by the institutions and the communities that they serve, the effect will be that of proper conservation and sustainable protection of marine resources and fish stocks.

The sustainable conservation of the marine living resources is an obligation which the State has to undertake to comply with the international and regional agreements as underpinned by UNCLOS, FAO instruments and other relevant agreements to which the State is a member, to fulfil the objectives of sustainable development goals and food security. States are to adopt policies that incorporate these fundamentals while protecting the environment for future generations. South African legislative framework has been credited for progressive effort for reviewing and amending sections that are redundant and addressing the spirit of inclusiveness.

CHAPTER 4. Analysis of Monitoring, Control and Surveillance (MCS) Measures in South Africa

4.1 Introduction

The global community is faced with the challenge of depleted marine resources in national and international waters due to IUU fishing activities. The international community has the responsibility to implement mechanisms that deter, prevent and eliminate IUU fishing by adopting MCS measures. The MCS measures vary and include: catch documentation (log record), VMS, and Automated Identification System (AIS). To accomplish this, enhancing monitoring systems and institutional resource capacity is imperative in order to detect infringements. A State has various means that can be used to detect non-compliance, for instance, the establishment of a TAC and TAE limitations.

VMS is valuable tool within MCS measures that coastal States may use to monitor fishing vessels activities in their jurisdiction. It may be used together with other instruments to enhance the effectiveness of other monitoring systems that involve sea patrol vessels, air patrol crafts and Fishery Compliance Officers to maximise the efforts (Tanci, 2009). VMS is a system where transmitters are fitted on fishing vessel and information given by transmitters are recorded in the land-based station. VMS records the information submitted by a fishing vessel at a fixed interval and records the position of a vessel through automatic transmission via satellite, very high frequency (VHF) radio, telephones and transmit it to a land-based station. Thereafter, land station then decides the distribution list for the position data, alert and license information and send the data to authority. VMS information is taken by Vessel transmitted information (VTI) system and VTI take the information of fishing catch also. Catch and information provided by VMS is proving very useful to have the information of fishing activities and enforce the controlling mechanism, all these activities are entered in e-logbook (FAO, 2020).

CCAMLR was established in 1982 and it is an international treaty between 25 country that seek to manage Antarctic fisheries for preserving species diversity and stability of Antarctic marine ecosystem. After some its work increases leading to IUU fishing. South Africa is a party to this convention. South African fishing vessels under the CCAMLR are required to install a

VMS⁵. It is incumbent on States that have signed or acceded to UNCLOS⁶ and subsequent FAO agreements⁷ to adopt a legislative framework that does not undermine the objectives of fisheries conservation and management of marine living resources within and outside their zones. States are under pressure to constantly find innovative means to protect the marine living resources. IUU fishing is more than an administration issue, but requires legislations including sufficient provision for ensuring transparent and open management, governance and establishing the need of co-management. Although evidence has pointed that foreign fishing vessels take advantage of State failure to control the registered fleets under their flags, they are not the only transgressors. In the South African context, IUU fishing within national waters is conducted by its citizens (Cochrane et al., 2020).

The MCS system produces a large amount of information through the different monitoring and surveillance programmes and this information is required immediately for surveillance activities and to effectively coordinate the deterring and prevention activities. The success of MCS measures is reliant on the collaborative efforts and communication of illegal fishing activities from regional country to local communities. The information sharing between the different areas of the fisheries management is very important for the development of a MCS system and fisheries administration. Therefore, it is imperative that States implement tools that are effective and necessary for their environment to monitor the fishing vessels activities in their jurisdiction to know the illegal fishing in the area and to enforce the necessary measures to deter the illegal fishing and seek the cooperation of RFMOs and other fishing bodies to eliminate IUU fishing.

Various factors that affect efficient fisheries management are the following, but not limited to demographics of domestic fisheries, fisheries economic contribution and socioeconomic factors among others, that ought to be considered when determining the appropriate MCS measures. (Davis, 2001). In 1994 the fisheries policy process was started by Minister of Environmental Affairs and Tourism and meeting was attended by public, stakeholders and Unions. During the policy process Industrial houses and Union were concerned about reallocation of access right should not disrupts the performance of industry which depends on

⁵ The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) International Convention of 1982, Article IX (1).

⁶ Law of the Seas Convention (LOSC) of 1982, Article 73.

⁷ The FAO Compliance Agreement, 'which elaborated it as integral part of FAO Code of Conduct' of 1 February 2002, Rome.

landing from quota holder. In 1994 the fishing company started allocation of share to worker, sale of share to black investor and joint venture with small scale operators. It initiated the reallocation process in South African fishing sector.

The MCS measures were under severe constraint after new entrants in 1994 in the small-scale fishing sector other than normal fishing community. The constraints were,

- a) There was lack of accurate data for small scale fishing sector.
- b) There was insufficient trained manpower at management and operational level on the small fishing vessel.
- c) Lack of information and awareness at the community level regarding the MCS.
- d) There was lack of supporting legislation to implement the MCS measures in small fishing sector.
- e) Lack of funding to implement MCS measures (Yadava, 2008). In South Africa, the fishing industry is dynamic in nature and will require efficient methods of monitoring a small and large fishing vessel.

The figure below shows link that scientific section analyses the influence of the management measure on the fish stock and fisher whereas MCS section gives details on the how much the fishers are compliant to the management measures.

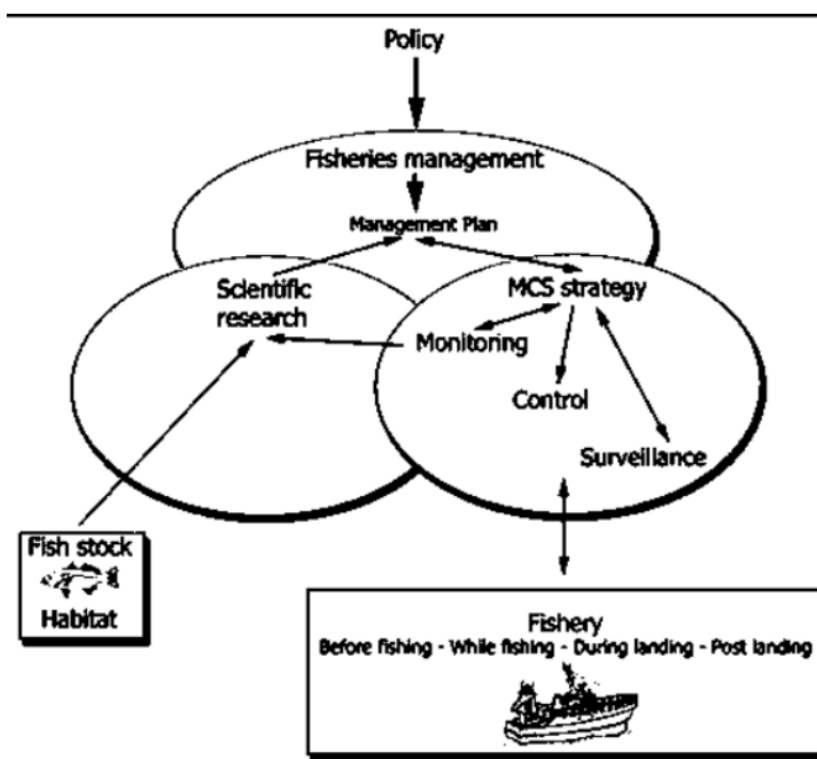


Figure 2. The main links between MCS and fishery management Source (Bergh & Davies, 2002).

4.2 Vessel Monitoring System (VMS)

A VMS forms an important part of MCS tools to coastal States as it provides early detection of illegal fishing vessels activities, of national and foreign licensed vessels to fish in their EEZ (Sodik, 2009). To be effective, other measures such as observer programme, catch documentation schemes, inspections of vessel in port and at sea and denial of port access or privileges to suspected IUU vessel of monitoring systems, should be considered in conjunction with VMS. It depends on fishing vessels installing the system to the extent that vessels not fitted with VMS cannot be detected. Together with the scientific observer, they can provide information to assist MCM to determine the TAC.

To enforce regulations, consistent monitoring of fishing vessel activities is required to guard against non-compliance, which is directly related to the decline of the fishing stocks. VMS is a satellite or remote system used to monitor fishing vessels' movements immediately as they occur near land-based points, to ensure compliance with stipulated regulations. The objective

of VMS is to enhance the effectiveness of national MCS measures. The primary benefit of VMS is for fisheries resource management and conservation. This also improves the targeted inspection where patrol vessel may be deployed after illegal fishing is detected. The VMS may be used with other enforcement mechanisms such as sea patrol vessels, controls on landing, embarkation of fishing observer (Tanci, 2009). To accomplish this, institutional resource capacity must be improved in order to detect infringements. Thus, “enforcement is considered to be governable precondition for the compliance motivation of deterrence” (Gezelius, 2011). Below figure shows the diagrammatic representation of the VMS configuration and it shows how the VMS data are transmitted to the land station for the data processing.

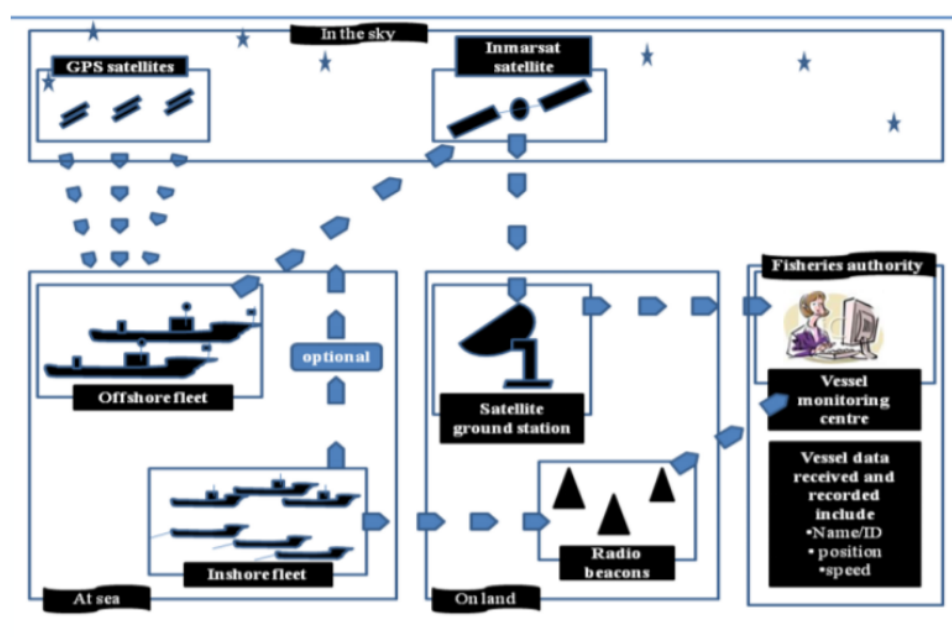


Figure 3. Diagrammatic illustration of a VMS configuration (Tanci, 2009).

IPOA-IUU empowers States to implement VMS in accordance with the international, regional and national prescripts. Accordingly, fishing vessels flying their flags are required to have VMS aboard⁸. Furthermore, both IPOA-IUU and UN Fish Stocks Agreement may be applied at both international and national level. DEFF department and MCM measures are to create an enabling environment that allows innovative solutions and ensures that they fulfil the

⁸ FAO Technical Guidelines for Responsible Fisheries: Implementation of the International Plan of Action to Prevent, Deter, Eliminate Illegal Unreported, and Unregulated fishing, Rome. 2002.

provisions of FAO agreements and RFMOs; SADC protocol on fisheries especially in the current economic climate that has not improved the fish stock due to various challenges faced like limited funding, limited technical skill and technology and IUU fishing.

The authorised fishers must ensure approval is granted by DEFF before the installation of VMS. Thus, it provides legitimate data collected from VMS within both the EEZ and the high seas (DAFF, 2015).

SADC region has a coastline that is long and has an elongated EEZ including Mozambique, Namibia, Angola and South Africa. These countries share a common interest and acknowledge the importance of fisheries stock harvested for commercial purposes, i.e. the “hake and mackerel in the Atlantic, tuna and prawns in the Indian ocean. Subtropical Indian Ocean bordering Mozambique, the Atlantic waters off Southern Angola, Namibia and South Africa are the most productive marine resources area in Africa” (Brassington, 2016).

The African Union (AU) highlighted weaknesses in combating IUU fishing due to the lack of enforcement capacity in the region and weak implementation measures. Often, a regional State’s approach in monitoring IUU fishing and implementing MCS measures is casual. However, South Africa’s legislative framework is comprehensive and may serve as an example to neighbouring States to improve their systems in combating IUU fishing (Brassington, 2016).

Among all the SADC regional States, Namibia has shown to have highest number (85%) of VMS installation on their fishing vessels. Due to their stable infrastructure availability, Namibia’s deterrence measures have proven to be effective. In the early 2000, implementation of MCS measures were successful in South Africa when due to the special environmental court that was active then, it was able to attend to backlog cases. However, ever since this specialized court has been closed, enforcement measures have been weakened due to prioritisations of other cases in other courts (Sjöstedt & Sundström, 2013).

Despite having the appropriate legislative framework, in South Africa, an MCS measures’ approach has not yielded satisfactory results when it comes to combating IUU fishing. Illegal fishing off the coast of Africa is a major factor of overexploitation. Since 2005, the methods employed have been that of law enforcement measures with the exclusion of the human rights such as equality and developmental governance in the small-scale fisheries, this has proven to be incompatible with the aspirations of the Constitution and MRLA. The objective of MRLA to promote right of equality and reduce discrimination in the fishing industry. (Isaacs &

Witbooi, 2019). The institutional downsizing has been detrimental in incapacitating the fisheries management.

A cost benefit analysis is closely linked to the performance assessment and it directly relates to the measure used for surveillance and monitoring. The level of compliance depends on the level of resources used and will determine the cost (Bergh & Davies, 2002). This consideration is beneficial for the State to address all policy and infrastructural limitations and to further explore existing cost-effective measures that can be implemented.

Furthermore, they must determine whether such turnkey solutions are for short or long term. For instance, leasing a vessel or using observers may be a reasonable measure under a cost benefit analysis (Bergh & Davies, 2002). Due to the global issue of IUU fishing and the increased demand and competition to provide deterring solutions, a VMS application cost is lower than other. The latter may provide a suitable solution, particularly at regional level as States are required to install VMS to combat IUU fishing (Bergh & Davies, 2002).

South Africa is using the VMS system, it is in operation since 2000, and presently it is fitted in excess of 1000 vessel (Agriculture Forestry & Fisheries, n.d.).

4.3 Capacity building of fisheries communities

Small-scale fisheries policies have encountered challenges during implementation, critically because of lack of transparent management and the need for co-management, and management plans. This shortcoming at DEFF created conflicts with potential beneficiaries of small-scale fisheries dependable on, for instance the “interim relief permits” that was renewed on yearly basis to give relief to small-scale fishery industry. This permit gives an opportunity to each fisher to sign with marketer who can market the product without any influence on the choice of marketer. A key barrier in governance institutions is lack of transparency in the management, it weakens the cooperation between small-scale communities and authorities, and to comply with MCS measures to prevent illegal fishing activities as government does not provide incentives that improves their socioeconomic circumstances (Cochrane et al., 2020b).

NEMA provides that authorities have an inclusive and active participation of the communities to prevent non-compliance of regulations, for instance, in the inland fisheries. Permits were unknown, however. To encourage compliance, authorities must conduct workshops to incorporate local knowledge in policies, and training to empower the communities on reasons why permits for example, should be utilized (Hara & Backeberg, 2014). Capacity building is

important to harmonize divergent understandings of concepts such as enforcement of MCS measures, regulations, sustainability and protection of the environment.

Prior to democracy, marine resources were regulated differently in both commercial, recreational and artisanal fishing. Commercial and recreational fishing have always been formalized by TAC and TAE measures. In artisanal or small-scale fishers, there were arrangements that were made in self-regulation, that were formalized, due to political arrangements of exclusion of artisanal fishing in the policies. New policy formulation processes for governing coastal and fisheries resources require involving all sectors of society.

Artisanal fishers had no information regarding the regulatory framework of the resources in the coastal areas nor knew that permits were required (Sowman & Hauk, 2005). New policies were drafted which included small-scale fishers also and that policies required the inclusion of the representatives chosen by the communities or elected stakeholders in decision making, particularly in management of fishing resources and coastal area. However, this process was implemented in the initial stages after adoption of small-scale fisheries policies and were not successful due to lack of trust that existed among the traditional leaders and government representatives and lack of budgets to continue with the project (Hauck & Sowman, 2001). The government and stakeholders should establish systems that build user confidence by providing platforms that empower the user to appreciate the process of monitoring marine resources.

Self-regulation is that fishers agreed to observe non-fishing days and closed season for sustainability of fisheries reason. The date of commencement of annual fishery is also agreed upon with in community. In addition, some fishers do not harvest certain species. They also avoid landing surplus fish in the market. In a non-regulated fishery, local self-regulatory agreement breaks down whenever fishery is under pressure and there is no self-restraint in harvesting the marine resources. There will be urgency to access maximum stock in shortest possible time in fear that stock will be finished before the seasons of fishing ends (Thomson & Farmhouse, 1984). Self-regulation is important as it grants the community control over the protection of their resources and livelihood and such methods motivate the community to report wrongful conduct of non-compliance when they experience it. However, scientists mistrust users to conserve resources in a sustainable manner. Capacity building plays a role also at regional level due the straggling fish stocks activities at high seas. The cooperation of other States to share information is required as it improves the maritime domain and response to the State in case of illegal fishing activities (NOAA, 2016).

MLRA makes provision for the services of Fishing Controlling Officers (FCO), whose functions are to inspect, search, arrest, issue fines and investigate illegal fishing activities. To investigate criminal fishing activities, they are regarded as peace officers and draw powers from the Criminal Procedure Act⁹. The fishing sector is complex and dialogue between the FCOs and fishing communities are important to enhance the MCS measures by capacitating officers with tools that are effective when conducting their duties. Trust that has broken down between the MCM authorities and fishers has led to mistrust of officials by the fishers due to elements of corruption by authorities and some have been charged for taking bribes. Furthermore, literature indicates that lack of capacity in enforcement measures is due to corruption in the system (Sunstroom, 2013), this results in fishers disregarding efforts by compliance officers conducting inspections. FCOs are representatives of the State, therefore fishers mistrust them and do not believe that they have good intentions while conducting their duties.

Small-scale fishers, large-scale fishers and recreational fishers describe FCOs as lazy and lacking knowledge of fishing activities (Norton, 2015). Capacitating the inspectors by offering training courses in fisheries that enhances their ability to make informed decision when facing complex situations, in particular eradicating corrupt behaviour seems to be crucial. Furthermore, specialised skills in the different types of fishing, to have better understand the basic principles of law enforcement measures, are necessary.

Moreover, increasing the number of FCOs is urgently required to address shortages of manpower to fulfil their mandate, given that South Africa has a long coastline that needs to be covered. Unfortunately, no improvement has emerged regarding capacity building of fishing inspectors in South Africa (Sunstroom, 2013).

4.4 Cooperative measures between State Agencies

4.4.1 South African Navy

In order to combat IUU fishing, cooperation between various State enforcement departments, including institutions working together in sharing information and engaging in joint operations, is required to combat IUU fishing both domestically and at high seas. To address fisheries crimes, DEFF in cooperation with the Directorate for Priority Crimes under the auspices of the

⁹ Criminal Procedure Act, no. 51 of 1977 (CPA), Section 51-57.

INTERPOL's Fisheries Crime Working Group, sought to increase its capacity to effectively deter and eliminate fishing crimes at high seas.

Domestically, institutions and departments such as the South African Defence Force (SANDF) within the South African Navy (SAN) assists South African Police Service (SAPS) who has a mandate to control illegal fishing by patrolling the South African national and international waters for crime prevention (De Coning & Witbooi, 2015a). SAN has four frigates, three offshore and three inshore patrol vessels to respond to any illegal fishing (Kings, 2016).

SAN is committed to fight illegal fishing by cooperating with other States in joint operations, and this involvement has been instrumental in detecting foreign fishing vessels engaging in illegal activities at sea. However, their capacity to conduct patrols is limited by budget's constraints, in a similar manner to what has happened to DEFF's budget. Therefore, SAN has capacity to conduct patrols, but it is not utilized consistently in joint operations¹⁰.

In 2013, the West Coast Overberg experienced high level of poaching, then a joint operation was conducted with SAN, Marine squad of SAPS and inspectors. This operation lasted for two months and as a result poaching was suppressed. However, not long after SAN left Gaansbaai the poachers were back in the area (NFDS, 2016). In 2016, in a different operation conducted by the SAN and DEFF patrol vessels apprehended three Chinese fishing vessels that entered the EEZ illegally as they did not have relevant fishing permits. Moreover, they switched off their AIS (Kings, 2016). This collaboration is indicating the enforcement capability of Navy to deter, eliminate and prevent IUU fishing. The success of this operation is double-edged as it points out that through concerted efforts of law enforcement institutions, the State was able to prevent the illegal fishing, and simultaneously highlights the weakness of using FCO in coastlines for the enormous task to be carried out by limited number of officers. The SAN continuous training equips the members to be combat ready and to understand the limitations in which to apply law. The training is highly specialised in order to provide national defence at high seas, however, their mandate is different to that of FCOs who are peace officers. Nonetheless, FCO lacks adequate training and are under resourced to enforce the regulations as laid out (Norton, 2015).

4.4.2 South African Police Services (SAPS)

SAPS have a major role to play in curbing the IUU fishing. FCOs depends on the support from SAPS in fulfilment of their duties. FCO enter the vessel, search and seize the property and any confiscated evidence to be handed over to SAPS as soon as possible. FCOs are fully dependent on the SAPS to effectively exercise the law enforcement functions. FCOs had no powers to investigate and they catch the suspects, statement recorded and case will be handed over to SAPS (Van as, 2019). Fisheries department, SAPS with the help of SAN carried out the operation Neptune to curb the poaching of Abalone fishing in year 1999 (Isaacs & Witbooi, 2019).

In recent years, violations of fisheries regulations are viewed also as transnational crime, which requires the involvement of all State security agencies, such as the SAPS, SAN, South African Revenue Service (SARS) and South African Maritime Safety Authority (SAMSA). High degree of coordination and cooperation across border in between police, custom and fisheries agency are required (Vrancken et al., 2019).

The International Law Enforcement Cooperation in the Fisheries Sector, a section of the International Criminal Police Organization (INTERPOL), administers the law enforcement of fishery crimes. The INTERPOL Global Fisheries Enforcement team assists member States to detect, suppress and combat fisheries crime. The INTERPOL engages with various government authorities as well as with the private sectors to coordinate the operation and destroy the crime network involved with illegal fishing (INTERPOL, 2015). It is an official international agency to support police and law enforcement agencies in 186 countries to prevent crime and to conduct investigation.

In this context SAPS law enforcement in the fisheries sector is a coordinated effort that includes State agencies as provided above. The challenge in this model of law enforcement is that it provides a short-term solution, given that this joint cooperation takes place upon special operations. Hence, there is little success in the law enforcement of abalone and Western Cape rock lobster (De Coning & Witbooi, 2015b).

The Criminal procedure Act (CPA) no 51 of 1977 empowers the police to effect searches and arrest where there is reasonable suspicion that an offence has been committed or to prevent it from taking place. The same Act provides FCOs as peace officers powers to arrest, search, and

impose penalties of fishery crimes and after hand over to the SAPS. In these departments, there is an overlap and duplication of duties and ineffective use of resources.

4.5 Conclusion

Implementation of MCS measures is underpinned in the international legal framework and national policies to combat IUU fishing. The effectiveness of MCS measures is reliant of the State policy objectives and available resources to achieve them. Furthermore, there must be synchronisation of institutions as they may cause an overlap resulting in misutilization of resources.

South African utilization of a VMS measure was adopted in the year 2000 when a database of registered fishing vessels was created. To strengthen the VMS's effectiveness, other tools such as penalty fees, licensing and patrols must be considered.

South African fisheries' MCS measures include law enforcement by State agencies by conducting joint operations; however, this measure is for a short term given different mandates bestowed on the agencies. FCOs are officers first in line in law enforcement, yet there is a lack of capacity to conduct their duties. Law enforcement in the fisheries sector requires the administration prioritization in order to deter, eliminate and prevent IUU fishing.

Chapter 5. A Comparative analysis of effective implementation measures to combat IUU fishing: the case of Norway

5.1 Introduction

Ocean economy is important to the global community for various reasons, in particular, as a means to improve socioeconomic circumstances for societies and preserve the environment. Overexploitation of fisheries has become a serious problem to coastal States. Hence, the global community has increased efforts to implement MCS measures to ensure a sustainable environment and as a result has entered into regional agreements and partnerships with different countries.

The international community has endeavoured to assist developing countries in their implementation of MCS measures and Norway has made such commitment with South Africa, prioritizing democracy, human rights, environment and natural resources, to mention just a few. Norway and South Africa have partnered to cooperate in promoting good governance and fisheries management and research¹¹. Through the European Union and FAO, the SADC developing countries have been assisted to install measures capable of combating IUU fishing (Sjöstedt & Sundström, 2013).

Norway has been chosen for the case study with the aim to analyse the effectiveness of its MCS enforcement capabilities initiatives to combat IUU fishing, as well as the implementation of policies with a view to promote democracy, human rights and the conservation of the environment and natural resources. Their initiatives will compare with those of South Africa. With Norwegian fishery management and research experience spanning over a hundred years and the first country to establish a specialized ministry, their success can be used as a benchmark to improve the fisheries sector in South Africa. Furthermore, they are leaders in fishery research, and technologically advanced.

The discussion and analysis seek to understand the implementation of policies by Norway in particular MCS measures used to detect infringements and violations of regulations, and make a deduction of the best practices applied. However, this comparison should be understood in the light of the vast prevailing differences of socioeconomic development in both countries,

¹¹ Minister of Foreign Affairs, 2006: Norwegian assistance to South Africa-regjeringen.no. Available at www.regjeringen.no> documenter > assistance-to-southafrica/en/ie4. Accessed on 28/08/2020.

with Norway being well advanced in technology and South Africa a developing country. This case study serves as an inspiration to which South Africa may enhance their efforts to combat IUU fishing.

The fishing sector provides employment opportunities and it is the biggest fishing nation in Europe. It has a fishing fleet that combines large and small fishing boats, which are both technologically advanced. Norway has fishing vessels harvesting with other neighbouring States and sought cooperation with them by being signatory to RFMOs¹². The country has been instrumental in the initiative of port State control, entering into binding contract with all North East Atlantic Commission (NEAFC), as a result of the influence of FAO Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated fishing.

The institutional arrangements are pivotal to the successful management of fisheries and the systematization provides a logical flow of information. Regulation of fishing is by means of quota system – as recommended by the International Council for the Exploration of the Seas (ICES) - and licensing. However, there is a great reliance on scientific research¹³. The management of fisheries is guided by the premise of a healthy and sustainable ecosystem for future generations. Regulatory process includes the input of stakeholders, local authorities, trade unions, environmental organizations and fishers' associations. This inclusion allows different stakeholders a shared responsibility with the institution as co-managers of natural resources and beneficiaries.

5.2 Implementation of measures to combat IUU fishing in Norway

Norway has effectively implemented several measures to combat IUU fishing within their jurisdiction. This decision is influenced by the compliance with the international law and cooperation of member States. Norway has included the provisions from the Agreement of Port State Measure (PSA) into Norwegian national law. Norway has established marine resource act 52, which states that department of fisheries to prevent IUU fishing, which is contrary to national management measures. There has been also secondary law on prohibition on landing of fish and other measures on IUU fishing through Norwegian law (Tonne, 2018).

¹² Food and Agriculture Organization, 2011: The Kingdom of Norway, Fishery and Aquaculture Country Profiles. Accessed on 29/08/2020.

¹³ Norwegian Fisheries Management, at <http://www.regjeringen.no/globalassets/upload/fkd/brosjyrer-og-veiledninger/folder.pdf>. Accessed on 29/08/2020.

5.3 Vessel Monitoring Surveillance

The Directorate of Fisheries has mandated the reporting by the fishing vessels whether Norwegian or foreign fishing vessels operating within their waters. For Norwegian fishing vessels, the Directorate of Fisheries has mandated to install an AIS, which is approved by the same department. The installer is also authorised by the Directorate of Fisheries to install the VMS transmitter or transceiver, which is programmed to transmit data such as position, vessel's speed as well as course (Norwegian Maritime Authority, 2000). This transmitter is used to track the movement of fishing vessel and it is a tool to improve the efficiency of MCS and improving the effectiveness of resource management (FAO, 2001).

The Norwegian authority has mandated the reporting and installation of VMS transmitters for all fishing vessels of 24 meters or more in length engaged in transport and fishing operations as well as harvesting seaweeds (Norwegian Maritime Authority, 2000). The Skagerrak area has more precise and stringent requirements for Norwegian and EU vessels. The position reporting is mandatory for these vessels operating within Skagerrak area. The international agreement facilitates the establishment of Fisheries Monitoring Centre (FMC) by flag States. These FMCs receive the position reports as well as various other electronic reports, which is forwarded to national FMCs (DOF, 2015).

5.4 Inspection of fishing vessel and catches

Norway has the Coast Guard capability under the stewardship of the Royal Norwegian Navy that patrols the EEZ. The Coast Guard has strong surveillance capacity with a fleet comprising of 13 vessels, all under the Royal Norwegian Ministry of Defence. Their duties include resource control and patrolling their EEZ as well as the inspection of foreign fishing vessels' daily catches against rights allocated to the vessel and any compliant licencing documentation (NMFCA, 2007).

They also use AIS for tracking the IUU fishing vessel. The automatic identification system is an automatic tracking system, which detect the vessel. They conduct more than 1,800 inspection on fishing vessels annually in Norwegian waters. They use all possible technology to monitor the activities of the fishing vessels, which includes VMS system. The VMS system are very effective in tracking the activities of the fishing vessels. The Norwegian Coast Guard tracks the vessels fishing activities, as fishers are obliged by law to place themselves in illegal

position¹⁴. The government relies intensively on the Coast Guard capabilities as evidenced by the budget spent in 2011 of 86 mill. € (James et al., 2019).

5.5 Enforcement resources

Quotas systems are used globally as means to restrict overexploitation of captured fish. The Norwegian system is divided in three groups and allocated to groups of vessels, either as per individual vessel quotas or by maximum quotas, which are set as upper limit of the annual catch. The interesting fact is that these quotas have a fixed quantity of particular species that cannot be exceeded¹⁵.

In 1994, Norway started blacklisting vessels that were identified in IUU fishing and/or such activities in the Northeast Atlantic Waters. These vessels are banned to do fishing activities in Norwegian waters. These blacklisting the vessel deter the IUU fishing in the Norwegian water. Other several States and organisations adopted this concept of blacklisting where Norway is a member State (NMFCA, 2007).

5.6 Discussion

MCS measures are measures recommended by the international community to conserve and exploit natural resources sustainably. Simultaneously, these measures must eliminate, deter and prevent IUU fishing. This depends on variable issues to be considered. Primarily, a State must have ratified or acceded UNCLOS and subsequent relevant agreements with the objective to deter, eliminate and prevent IUU fishing. Furthermore, these policies are aligned to achieve these objectives. However, one of the barriers of effective implementation of policies is the fragmented institutional structures and budget constraints, therefore stretching limited resources in their disposal. The study analysed the institutional framework and policies in relation to effective management of fisheries resources and MCS measures to deter IUU fishing in South Africa and Norway as case study.

¹⁴ Norwegian Ministry of Fisheries and Coastal Affairs, "Norwegian fisheries management our approach on discard of fish, at http://www.regjeringen.no/globalassets/upload/fkd/brosjyrer-og-veiledninger/fact_sheet_discard.pdf. Accessed on 29/08/2020.

¹⁵ Norwegian Fisheries Management, at <http://www.regjeringen.no/globalassets/upload/fkd/brosjyrer-og-veiledninger/folder.pdf>. Accessed on 30/08/2021.

The two country's institutional framework varies, and implementation of policies' approaches contrast significantly. However, there are similarities regarding the adoption of MCS measures to combat IUU fishing. South Africa has established a legal administration framework focusing on policies that requires inclusivity of small-scale fisheries. However, the implementation thereof brought challenges among fishing sectors. South African IUU fishing generally relates to non-compliance of regulations by the citizens within the national EEZ (De Coning & Witbooi, 2015).

There are efforts made by DAFF administration to have structures that are effective and in line with policies, however the lack of implementation resources such as budget constraints and downsizing the department contributes to an unsuccessful deterrence of IUU fishing. In Norway, their success is based on the value attached to a healthy ecological system and the sustainability of marine resources. As such, the administrators rely on the advice from the scientific recommendations of ICES for the determination of quotas, which needs to be adhered to. Furthermore, any policy considerations include the relevant stakeholders, in particular trade unions and associations representing fishers. This approach provides affected fishers a voice as they are taken to confidence in the processes for meetings that take place twice a year.

With respect to South Africa the dynamics of the country required an approach which will respond to the socio-economic development and empowerment of small-scale fishers to participate in decision making and self-regulate, and that implies the requirement that DAFF consults the stakeholders. However, the small-scale fishers feel that their views are not considered by DAFF.

The monitoring of natural resources in South Africa is of acceptable international standards as they apply scientific recommendation of quota system through TAC and TAE and this practice was applauded by the international community (Cochrane et al., 2020).

Nonetheless, the enforcement capacities of the MCS system in South Africa is lacking and that created a loophole in which infringements take place (Norton, 2015). In order to effectively apply the VMS system adopted by South Africa, other tools such as licenses stating species, allowable quotas for each fishing boat, patrolling vessels and FCO, should be effectively operational to fulfil objectives of conservation of natural resources in a sustainable manner. However, as alluded in this study, there are weaknesses in enforcement measures due to the inconsistent application of MCS measures and lack of capacity of FCO to inspect, patrol the coastline and record data that could be utilized as evidence in court (Nolan, 1999).

The Norwegian government's approach to law enforcement is undertaken by the Norwegian Coast Guard with thirteen vessels for surveillance and patrols. The institutional structures are harmonized with the objectives of the Department of Fisheries and well resourced. The Navy is empowered to conduct the searches of the vessels and crew and retain data for possible prosecution. Furthermore, they are able to assist fishers to discard fish captured illegally or redirect them to leave the area. This differs with joint operation conducted by the South African Navy, SAPS, DAFF and FCO. Because of the different mandates that the law enforcers have at national level, the operations are not undertaken on a regular basis, therefore serve as a short-term solution. Although FCO are empowered to enforce the law having similar powers as Norwegian Coast Guard, there are limited in their operation by a shortage of manpower.

Norway has vast experience in fisheries management and research, in recent years they play a pivotal role in supporting the developing States on implementation of policies that improves the MCS measures, for instance, investing in training of FCO in partnership with Fish Force with the aim of capacity building (SLF, 2016).

5.7 Conclusion

IUU fishing is a sad reality of each coastal State, however, the difference is how this issue is managed or eliminated. Norway is not distinct in this regard. Their approach is to conserve and sustain. The policy objectives are achieved by investing resources that will meet these goals. The use of scientific observers and researchers is respected, in that it provides an understanding of which management of fisheries can benefit. This case study analysed the manner in which Norway implements their enforcement measures to combat IUU fishing by assessing the international and national legal framework and implementations of policies. Moreover, it illustrates an example of the effectiveness of MCS measures where stakeholders and government administrators have a good relationship to fulfil the objectives. Furthermore, various capacities of law enforcement such as the mandatory of VMS installation on Norwegian fishing vessels, inspection and surveillance tracked 24 hours. This includes foreign fishing vessels that are instrumental in mitigating the effects of IUU fishing. The enforcement measures are respected because they benefit healthy ecosystems and thus improve the harvest of fish stocks.

From a South African perspective, there are innumerable issues in controlling the IUU fishing. There are mismatches in terms of policy objectives and the allocation of resources to fulfil

these objectives. For instance, fishers who lack regard for FCO inspectors because they allege that they are corrupt. A VMS system is effective where there are mandatory regulations for accountability. A VMS measure strengthens MCS capabilities of traceability of fishing vessels activities. Moreover, if it is complemented by other tools such as operational licenses or any authenticated certification of the goods harvested. The weakness of a VMS system is the reliance on fishing vessels owners to install it, and that if installed, it can be manipulated or switched off to avoid detection. Also, certificates are susceptible to manipulation.

A measure to mitigate the shortcoming of verifying actual goods is a regular training of FCOs about different species and what constitutes a legitimate document (Norton, 2015). Law enforcement can benefit if the legal framework of policies includes techniques such as forensic to improve detection of illegally captured species. Forensics science is the wide spectrum of science to answer questions of interest in the legal system in relation to a crime. Proof produced by forensics can support investigations and deter illegal fishing activities along the food supply chain (Martinson, 2011). Nonetheless, law enforcement capability closes this loophole if the country is determined to eliminate, deter and prevent IUU fishing.

Chapter 6: Conclusion and Recommendation

6.1 Conclusion

a) IUU fishing and International regime towards combating

The FAO instruments on IUU fishing have been established to eliminate and deter IUU fishing. Instruments such as the 1958 Convention on Fishing and Conservation of the Living Resources of the High Seas sought international cooperation to properly manage high seas' fish stocks. Further, instruments such as the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the sea of 10 December 1982 relating to Conservation and Management of Straddling Fish Stocks Agreement and Highly Migratory Fish Stocks (UN Fish Stocks Agreement), provides duties on how to maintain control of fish stocks and includes the use of MCS.

IPOA-IUU is a voluntary and non-binding instrument following whose adoption the States are encouraged to bring in fisheries conservation and management measures into the national legislation or regulations with an objective to prevent, deter, and eliminate IUU fishing. This is achieved by implementation of enforceable measures through flag States on fishing vessels measures such as fishing vessel identification and marking fishing gear.

The 1995 code of Conduct for Responsible Fisheries, and the 1993 Agreement to Promote Compliance with International Conservation and Management Measure by Fishing Vessels on the High Seas also known as (FAO Compliance Agreement) are instruments that facilitate implementation of MCS.

Implementation of MCS measures is underpinned in the international legal framework and national policies to combat IUU fishing. The effectiveness of MCS measures is reliant of the

State policy objectives and available resources to achieve them. Furthermore, there must be synchronisation of institutions as they may cause an overlap resulting in misutilization of resources.

Further, a major responsibility lies on the Flag States to maintain control of the fishing vessels flying their flags. However, flag States fail to comply effectively with UNCLOS article 94(1) with regards to management of fishing vessels under their flag whilst operating at high seas. In this context, use of fishing licences or employment of fishing observers and inspection schemes or instruments that are legally enforceable documents are among MCS measures available for implementation to improve control over the fishing vessels.

b) SA role and its regime to combat IUU fishing

This dissertation has analysed the effectiveness of MCS measures in South Africa, in particular the VMS and the law enforcement capacities of State agencies to deter, eliminate and prevent IUU fishing. The South African legal framework is in line with the international regulations and SAN, SAPS and FCOs contribute resources for IUU fisheries inspection and deterrence. It further attempted to highlight the weaknesses of the fisheries management as a contribution to the failure of the effectiveness to combat IUU fishing. There is limited human and financial resources, and also a lack of cooperation among enforcement agencies as well as inconsistency of law enforcement measures.

South Africa's large coastline provides to be a challenge to the DEFF considering that the fishing ecosystem is distinct in this region. Additionally, even though MLRA is a vital instrument of SA to combat IUU fishing, it has not been effectively enforced by DEFF. This due to the fact that there has been institutional down scale which has resulted in lack of manpower to effectively implement measures to combat IUU fishing. A key barrier in governance institutions is lack of transparency in the management, it weakens the cooperation between small-scale communities and authorities, to comply with MCS measures to prevent illegal fishing activities as government does not provide incentives that improves their socioeconomic circumstances(Cochrane et al., 2020b).

c) Status of SA's current system

There are many contributing factors to IUU fishing, such as policies that are incompatible to the effectiveness of law enforcement, socio-economic issues, lack of expert knowledge in fisheries management, and poor consultation with all stakeholders. Among the concerning

issues, it is the prevalence of corruption in the enforcement agencies, that has triggered mistrust among stakeholders. It became clear that DEFF policies were reviewed in an attempt to address issues of marginalization and rights allocation in the fishing sector and to deter IUU fishing. However, it brought many new entrants in the small-scale fishing sector without effectively providing legitimate verifications of the fishing rights. Furthermore, the implementation of these policies, in particular small-scale fisheries policies, have not been transparent and long-term fishing rights holders brought tension in the fishing sector with small fishing vessel owners. It is during this period that IUU fishing increased taking advantage of the loopholes in regulations. Moreover, MCS measures and tools required to combat IUU fishing were inefficient to deal with these developments.

There are notable weaknesses in the efficiency of fishing management as observed from the government department constant change in the ministry. This heightened the uncertainty and stability required by the fishing sector due to lack of transparency. Furthermore, the continual decline in management efficiency in the department has impacted negatively on human resource management in hiring. It is the fact that Abalone fish are depleting.

South Africa MCS plan includes the use of VMS and the combination of port inspections, sea patrols and the deployment of FCOs. The State agencies such as SAN, SAPS, INTERPOL, and FCOs conduct joint operations using sea patrols. However, these patrols are not consistent; therefore, they are only useful as short-term deterring measure. The fisheries department has only four fishing surveillance vessels, this number is inadequate given that the SAN do not conduct patrols in close intervals.

VMS is important for long- and short-range detection because of the prompt feedback it provides while the illegal fishing takes place. In South Africa, there is a database of registered fishing vessels using VMS. However, the weakness is that a VMS can be manipulated or switched off on the fishing vessel. Moreover, it requires the strength of law enforcement capability to ensure its compliance. Patrolling of the coastline is weak and has created a loophole of illegal activities taking place, independent use of VMS is not effective.

Fishing inspectors are endowed with powers to patrol, search the crew and fishing vessels, however it has emerged that there is a lack of capacity building, training and are under staffed for responsibilities they are placed upon. The fisher's disrespect fishing inspectors due to their insufficient knowledge and understanding the complex species dealt with daily. Moreover, they are often confused on appropriate actions to be taken in procedures to assist fishers to avoid

violations. Inspectors are overpowered by the numbers of fishers engaged in illegal activities, as a result they are unable to discharge their duties effectively.

d) Norway's regime towards deterrence of IUU Fishing

The Norwegian case study provides a perspective of good practice in fishing management to deter IUU fishing by implementing process such as reporting and installation of transmitters for all fishing vessels of 15 meters or more in length engaged in transport and fishing operations as well as harvesting seaweeds. The international agreement by Norway facilitates the establishment of Fisheries Monitoring Centre (FMC) of Norwegian fishing vessels by receiving position reports or electronic reports, which is thereafter forwarded to national FMCs.

Norway illustrates an example of the effectiveness of MCS measures where stakeholders and government administrators cooperate with measures such as mandatory VMS installation on Norwegian and foreign fishing vessels which facilitates 24 hours surveillance.

e) Challenges in implementing the Norwegian system in SA

There is encouraging sign is that South African government has given a lot of attention to IUU fishing and awareness of the danger it represents is increasing. However, South Africa needs to be more proactive in its measure to ensure that IUU fishing is effectively combated.

For example, the good practices established by Norway is a very good initial point of reference. The effectiveness of the Norwegian Coast Guard with thirteen vessels for surveillance and patrols to conduct the searches of the vessels and crew and retain data for possible prosecution have to be mentioned. On detection of IUU fishing, the coast guard vessels enforce discard of fish captured illegally or redirect them to leave the area. This differs with joint operation conducted by the South African Navy, SAPS, DAFF and FCOs with operations that are not undertaken on a regular basis and serve as a short-term solution. Although FCOs are empowered to enforce the law having similar powers as Norwegian Coast Guard, there are limited in their operation by a shortage of manpower.

Many factors affect the efficient fisheries management they include the efficient manner of using available resources. Data revealed that FCO's require sufficient training to execute their duties. Although the administrators consult stakeholders and the community for policy development, however, evidence has shown that the concerns of allocation of fishing rights continually raised by stakeholders and communities are not given full attention. The law enforcement and MCS measures are under severe constraint since scaling down of human

resource. Furthermore, the closing down of environmental court has collapsed the efficiency in which non-compliance can be effectively dealt with. Finally, the study highlighted the existing animosity between fisheries management and communities and stakeholders due to mistrust of administrators' decisions and lack of transparency in processes and feeling led down by fisheries administrators. Therefore, these circumstances provide an opportunity for non-compliance or rebelliousness towards fisheries laws and regulations.

6.2 Recommendations

The dissertation concludes that the following measures may be undertaken by the South African government to improve of their current management and deterrence of IUU fishing:

1. At policy level

The harmonization of fisheries policies should be considered to ensure efficiency in its implementation. In particular, the implementation of a policy on small-scale fisheries has brought many challenges. The department should have transparent processes that are easy to understand by the actors involved, in particular the fishers.

The department should consider improvement of Satellites Remote Sensing (SRS) as a long-term solution, due to their efficiency in detecting vessel movements and detection of illegal activities. This method is cost effective, as it requires less human participation. Research in law enforcement capabilities is required to shed light in the effectiveness of MCS measures.

Human resources involved in the enforcement activities need to be increased. Cooperation and information sharing need to be prompt between different stakeholders involved in the deterrence of IUU fishing.

At an administrative level, more human resources capacity should be employed.

MCM should consider strict application of MCS measures in the fishing industry and non-compliance should be penalized according to seriousness of violations.

2. At management level

More training and exchange programmes are required in both commercial and small-scale fisheries with regard to sustainable ways of fishing.

Fisheries inspectors should be afforded training and refreshers' courses to equip and keep abreast with new trends in the fishing sustainability methods that will enhance compliance with

regulations. Exchange and training programme for FCOs with the country having good practices in deterring IUU fishing will bring considerable change in techniques.

3. At international level

Administration should have a database of companies and individuals who are not compliant with fisheries regulations and laws and they should have power to blacklist from operating in South African water. Blacklisting of company and vessel should be shared and published as measure of deterrence and information to others concerned.

Regional initiatives of cooperation and information exchange are required between African nations for combating IUU fishing.

Further, there is very limited discussion in this area of research, focus must be shifted to this area and determine other efficient methods available in this area.

Reference

- Agriculture Forestry & Fisheries. (n.d.). *The South African fisheries vessel monitoring system (VMS)*. mpaforum.org.za.
- Attard, D., Fitzmaurice, M., & Gutiérrez, N. A. M. (2014). *The IMLI manual on international maritime law: Volume I: The law of the sea* (Oxford University Press, 2014), p. 46.
- Barange, M., Bahri, T., Beveridge, M. C., Cochrane, K. L., Funge-Smith, S., & Poulain, F. (2018). Impacts of climate change on fisheries and aquaculture. *United Nations' Food and Agriculture Organization*.
- Balton, D. (2001). *Origin and purpose of IPOA-IUU*.
<http://www.fao.org/3/y3536e01.htm#bm01>
- Bene, C., Barange, M., & Subasighe, R. e. (2015). Feeding 9 billion by 2050- Putting fish back on the menu. *Food Security*, 261-274. DOI: [10.1007/s12571-015-0427-z](https://doi.org/10.1007/s12571-015-0427-z)
- Belhabib, D., Sumaila, U. R., & Le Billon, P. (2019). The fisheries of Africa: Exploitation, policy, and maritime security trends. *Marine Policy*, 101, 80-92.
- Benkenstein Alex. (2015). *achieving an inclusive blue economy for small-scale fishers: Recommendations to the South African parliament*.
https://media.africaportal.org/documents/saia_spb_128_benkenstein_20150303.pdf
- Bergh, P. E., & Davies, S. (2002a). *A fishery manager's guidebook: Management measures and their application*. Rome: FAO.
- Bergh, P. E., & Davies, S. (2002b). *Fishery monitoring, control and surveillance* In: Cochrane KL, editor. *A fishery manager's guidebook: management measures and their application*. FAO fisheries technical article no 424. Rome: Food and Agriculture Organization of the United Nations; 2002.
- Boerder, K., Miller, N. A., & Worm, B. (2018). Global hot spots of transshipment of fish catch at sea. *Science Advances*, 4(7), eaat7159. <https://doi.org/10.1126/sciadv.aat7159>
- Bondaroff, T. N. P., Van Der Werf, W., & Reitano, T. (2015). The illegal fishing and organized crime nexus: Illegal fishing as transnational organized crime. *The Global Initiative against Transnational Organized Crime and the Black Fish*, 84. DOI: [10.13140/RG.2.2.25695.51364](https://doi.org/10.13140/RG.2.2.25695.51364).
- Branch, G. M., Hauck, M., Siqdwana-Ndulo, N., & Dye, H. (2002). Defining fishers in South African context: Subsistence, artisanal and small-scale commercial sectors. *South African Journal of Marine Science*, 24 (2002), pp. 475-487.

- Branch, G. M., & Clark, B. M. (2006a). Fish stocks and their management: The changing face of fisheries in South Africa. *Marine Policy*, 30(1), 3-17.
- Branch, G. M., & Clark, B. M. (2006b). Fish stocks and their management: The changing face of fisheries in South Africa. *Marine Policy*, 30(1), 3-17.
<https://doi.org/10.1016/j.marpol.2005.06.009>
- Bryndum-Buchholz, A. (2020). Marine ecosystem impacts and management responses under 21st century climate change. <http://hdl.handle.net/10222/79658>
- Christina Kelly, Geraint Ellis, & Wesley Flannery. (2019). Unravelling Persistent Problems to Transformative Marine Governance. *Frontiers in Marine Science*, 6.
<https://doi.org/10.3389/fmars.2019.00213>
- Cochrane, K., Joyner, J., Sauer, W., & Swan, J. (2015). An evaluation of the Marine Living Resources Act and supporting legal instruments as a framework for implementation of an ecosystem approach to fisheries in South Africa. *African Journal of Marine Science*, 4, 437. 37(04).
- Cochrane, K., Eggers, J., & Sauer, W. H. H. (2020). A diagnosis of the status and effectiveness of marine fisheries management in South Africa based on two representative case studies. *Marine Policy*, 112, 103774.
<https://doi.org/10.1016/j.marpol.2019.103774>
- COLTO. (2015). IUU history <https://www.colto.org/toothfish/iuu-toothfish-history/>
- Cummins, A. (2004a). The marine stewardship council: A multi-stakeholder approach to sustainable fishing. *Corporate Social Responsibility and Environmental Management*, 11(2), 85-94.
- DAFF. (2015). *Department of agriculture, forestry and fisheries: Strategic plan 2015/16 and 2019/20*. Republic of South Africa: DAFF. <https://pdf4pro.com/view/2015-16-to-2019-20-strategic-plan-31a2af.html>
- Davis, J. (2001). Monitoring control surveillance and vessel monitoring system requirements to combat IUU fishing. Expert Consult. On Illegal, Unreported and Unregulated Fishing, Sydney (Australia).
- De Coning, E., & Witbooi, E. (2015a). Towards a new ' fisheries crime' paradigm: South Africa as an illustrative example. *Marine Policy*, 60, 208-215.
- De Graaf, G., & Garibaldi, L. (2014). The Value of African Fisheries. *FAO Fisheries & Aquaculture Circular*, 1093, iv-76.
- Delgado, L., Wada, Rose grant, Meijer, & Ahmed, (2003). Fish to 2020, Supply and Demand in Changing Global Markets. *Food & Nutrition Bulletin*, 25(1), 94. Washington. D.C: International Food Policy Research Institute.
- Directorate of Fisheries. (2015). *Electronic reporting systems*.
<https://www.fiskeridir.no/English/Fisheries/Electronic-Reporting-Systems>
- Doumbouya, A., Camara, O. T., Mamie, J., Intchama, J. F., Jarra, A., Ceesay, S., et al. (2017). Assessing the effectiveness of monitoring control and surveillance of illegal fishing: The case of West Africa. *Frontiers in Marine Science*, 4, 50.

Dr. Chimungeni-Brassington, J. (2016). *STATUS OF MONITORING, CONTROL AND SURVEILLANCE SYSTEMS IN SOUTHERN AFRICA strengthening national and regional capacities for combating illegal, unreported and unregulated fishing* African Union. www.au-ibar.org

Elvestad, C., & Kvalvik, I. (2015). Implementing the EU-IUU Regulation: enhancing flag state performance through trade measures. *Ocean Development and International Law*, 46(3), 241–255. DOI: 10.1080/00908320.2015.1054745.

Expert consultation on the use of vessel monitoring systems and satellites for fishing monitoring control and surveillance (2006). Rome: FAO. <http://www.fao.org/3/a-a0959e.pdf>

FAO. (2001a). *Fishing operation, vessel monitoring system*. Rome: Food and Agriculture organization of united nation. <http://www.fao.org/3/a-w9633e.pdf>

FAO. (2001b). *International plan of action to prevent, deter and eliminate illegal, unreported and unregulated fishing* <http://www.fao.org/3/a-y1224e.pdf>

FAO. (2003). *Expert Consultation on Fishing Vessels Operating Under open Registries and Impact on Illegal, Unreported and Unregulated fishing*. ROME: FAO. <http://www.fao.org/tempref/docrep/fao/006/y5244e/y5244e00.pdf>

FAO. (2002a). *International plan of action – iuu* <http://www.fao.org/3/y3536e04.htm>

FAO. (2002b). *FAO technical guidelines for responsible fisheries*. <http://www.fao.org/fishery/publications/technical-guidelines/en>

FAO. (2009). *FAO: Regional workshop on port state measures to combat illegal, unreported and unregulated fishing*. <http://www.fao.org/3/a-i0763e.pdf>

FAO. (2018). *FAO fisheries and aquaculture: Country profile*. <http://www.fao.org/fishery/facp/ZAF/en>

FAO. (2019). *Illegal, unreported, unregulated fishing* <http://www.fao.org/iuu-fishing/en/>

FAO. (2020a). *Coordinating working party on fishery statistics. (CWP)* <http://www.fao.org/cwp-on-fishery-statistics/en/>

FAO. (2020b). *the fight to save our oceans*. <http://www.fao.org-fao-stories/article/en/c/1136937>

FAO. (2020c). *the state of world fisheries and aquaculture (SOFIA)*. Rome: FAO. <http://www.fao.org/3/ca9229en/ca9229en.pdf>

FAO. (2020d). *State of world fisheries and aquaculture (SOFIA)*. Rome: FAO. <http://www.fao.org/publications/sofia/2020/en/>

FINSA. (2020). *Fish FORCE academy strengthens ties*. <http://www.fishingindustrynewssa.com/2020/08/11/fishforce-academy-strengthens-tie>

Flewelling, P., Cullinan, C., Balton, D., Sautter, R. P., & Reynolds, J. E. (2003). Recent trends in monitoring, control and surveillance systems for capture fisheries. *FAO FISHERIES TECHNICAL PAPER*, 415.

- Gallic, B. L., & Cox, A. (2006). An economic analysis of illegal, unreported and unregulated (IUU) fishing: Key drivers and possible solutions. *Marine Policy*, 30(6), 689–695. <https://doi.org/10.1016/j.marpol.2005.09.008>
- Ganapathiraju, P. 2012. Illegal and unreported fishing: Global analysis of incentives and a case study estimating illegal and unreported catches from India. PhD Thesis. University of British Columbia, Vancouver, Canada.
- Gezelius, S. S., & Hauck, M. (2011). Toward a Theory of Compliance in State-Regulated Livelihoods: A Comparative Study of Compliance Motivations in Developed and Developing World Fisheries. *Law & Society Review*, 45(2), 435–470.
- Glaser, S. M., Roberts, P. M., & Hurlburt, K. J. (2019). Foreign Illegal, Unreported, and Unregulated Fishing in Somali Waters Perpetuates Conflict. *Frontiers in Marine Science*, 6, 704. <https://doi.org/10.3389/fmars.2019.00704>
- Hara, M. M., & Backeberg, G. R. (2014). An institutional approach for developing South African inland freshwater fisheries for improved food security and rural livelihoods. *Water SA*, 2, 277. <https://doi.org/10.4314/wsa.v40i2.10>
- Harrison, J. (2019). Key challenges relating to the governance of regional fisheries. R. Caddell, E.J. Molenaar (Eds.), *Strengthening International Fisheries Law in an Era of Changing Oceans*, Hart Publishing, Oxford, UK; Portland, Oregon, pp. 79–102.
- Hauck, M., & Sweijd, N. A. (1999). A case study of abalone poaching in South Africa and its impact on fisheries management. *ICES Journal of Marine Science*, 56(6), 1024–1032. <https://doi.org/10.1006/jmsc.1999.0534>
- Hauck, M., & Sowman, M. (2001). Coastal and co-management in South Africa: An overview and analysis. 25, 173–185. [https://doi.org/10.1016/S0308-597X\(01\)00007-0](https://doi.org/10.1016/S0308-597X(01)00007-0)
- Hauk, M., & Sowman, M. (2005). Coastal and fisheries co-management in South Africa-is there an enabling legal environment https://hdl.handle.net/10520/AJA10231765_69
- ILO. (2020). *Forced labour and human trafficking in fisheries* <http://www.ilo.org/global/topics/forced-labour/policy-areas/fisheries/lang-en>.
- IMO. (2015). *IMO and sustainable development*. <http://www.imo.org/en/MediaCentre/HotTopics/Pages/SustainableDevelopmentGoals.aspx>
- INTERPOL. (2015). *Fisheries crime* <https://www.interpol.int/en/Crimes/Environmental-crime/Fisheries-crime#:~:text=Our%20intelligence%20officers%20aim%20to,profits%20from%20illicit%20fishing%20activities>.
- Isaacs, M., & Witbooi, E. (2019). Fisheries crime, human rights and small-scale fisheries in South Africa: A case of bigger fish to fry. *Marine Policy*, 105, 158–168. <https://doi.org/10.1016/j.marpol.2018.12.023>
- James, K.M., Uhlmann, S., Ulrich, C., Kennelly, S. (2019). *Tools and technologies for the monitoring, control and surveillance of unwanted catches: The European landing obligation*. <https://doi.org/10.1007/978-3-030-03308-8>

- J.M. Harris, M. Sowman, G.M. Branch, B.M. Clark, A.C. Cockcroft, C. Coetzee, *et al.* (2002). Recommendations for the management of subsistence fisheries in South Africa. *South African Journal of Marine Science*, 24(1), 503-523.
- Joseph Luomba, Ratana Chuenpagdee, & Andrew M. Song. (2016). A Bottom-Up Understanding of Illegal, Unreported, and Unregulated Fishing in Lake Victoria. *Sustainability*, 8(10), 1062. <https://doi.org/10.3390/su8101062>
- Kings, S. (2016a, " "). SA at sea over illegal fishing in its waters. <https://mg.co.za/article/2016-05-19-00-sa-at-sea-over-illegal-fishing-in-its-waters/>
- Kleinschmidt, H.Sauer, W. H. H., & Britz, P. (2010). Commercial fishing rights allocation in post-apartheid in South Africa reconciling equity and stability *South African Journal of Marine Science*, 23, pp. 25-35.
- Kuemlangan, B., & Press, M. (2010). Preventing, Deterring and Eliminating IUU Fishing. – Port State Measures”, in *Environmental Policy and Law*, 40/6, United Nations Activities. *Envtl. Pol'y & L.*, 40, 262.
- Lobach, T., Petersson, M., Haberkon, E., & Mannini, P. (2020). *Regional fisheries management organizations and advisory bodies*. DOI: 10.4060/ca7843en
- Luomba, J., Chuenpagdee, R., & Song, A. M. (2016). A Bottom-Up Understanding of Illegal, Unreported, and Unregulated Fishing in Lake Victoria. *Sustainability (2071-1050)*, 8(10), 1062. <https://doi.org/10.3390/su8101062>
- Martinsohn, T. J. (2011). *Deterring illegal activities in the fisheries sectors*. Italy: EU. doi 10.2788/98207.
- McGoodwin, J. R. (1984). Some examples of self-regulatory mechanisms in unmanaged fisheries. *FAO Fisheries Report (FAO)*, No. 289, Supplement. Rome. <https://agris.fao.org/agris-search/search.do?recordID=XF8442597>
- Minnaar, A., Schalwyk, L., & Kader, S. (2018). The difficulties in policing and combatting of a maritime crime: The case of abalone poaching along South Africa's coastline. *Journal of the Indian Ocean Region*, 14(1), 71-87 <https://doi.org/10.1080/19480881.2018.1421448>
- Mohamed, S. D. (2009). IUU fishing and Indonesia legal framework for vessel registration. *Ocean Development and International Law*, 249-267. <https://doi.org/10.1080/00908320903076797>
- Molenaar, E. J., & Caddell, R. (2019). "Options and pathways to strengthen international fisheries law in an era of changes oceans." strengthening international fisheries law in an era of changing oceans. *Oxford Hart*.
- Morgan, G. R. (2001). *Individual management of quota management in fisheries*. Methodologies for Determining Catch Quotas and Initial Quota Allocation. In: Organization Fao, editor: Corporate Document. Repository. <http://www.fao.org/DOCREP/003/W7292E/W7292E7200.HTM>.
- National Oceanic and Atmospheric Administration. (2016). *Strategic plan for building international capacity to strengthen management of fisheries and combat illegal, unreported and unregulated fishing*. United States of America: Department of

- Commerce.
https://www.iuufishing.noaa.gov/Portals/33/Rec6_StrategicActionPlan_REV.pdf
- Naylor, R. L., Goldburg, R. J., Primavera, J. H., Kautsky, N., Beveridge, M. C. M., Clay, J., Folke, C., Lubchenco, J., Mooney, H., & Troell, M. (2000). Effect of aquaculture on world fish supplies. *NATURE -LONDON-*, 6790, 1017.
- Ndlangamandla, M. (2020, Small- scale fishing 'key to economic transformation. *Times Live News Paper*, <https://www.timeslive.co.za/ideas/2020-03-18-small-scale-fishing-key-to-economic-growth-and-transformation/>
- Negm, N. (2012). *2 0 5 0 Africa's integrated maritime strategy (2050 aim strategy)*
https://au.int/sites/default/files/newsevents/workingdocuments/33832-wd-african_union_3-1.pdf
- NFDS. (2016). *FISH-I AFRICA ISSUES/INVESTIGATIONS/IMPACTS*.
https://stopillegalfishing.com/wp-content/uploads/2016/07/FISH-i-Africa-Issues-Investigations-and-Impacts_report_WEB.pdf
- NOAA. (2020). *NOAA fisheries*.<https://www.fisheries.noaa.gov/about-us#overall>
- Nolan, C. P. (1999). *Proceedings of the International Conference on Integrated Fisheries Monitoring, Sydney, Australia, 1-5 February 1999*. Food and Agriculture Organization of the United Nations (FAO).
- Norton, M. (2015). The militarisation of marine resource conservation and law enforcement in the Western Cape, South Africa. *Marine Policy*, 60, 338–344.<https://doi.org/10.1016/j.marpol.2014.09.007>
- Norwegian Ministry of Fisheries and Coastal Affairs, (NMFCA). (2007). *Norwegian fisheries management* <https://www.regjeringen.no/globalassets/upload/fkd/brosjyrer-og-veiledninger/folder.pdf>
- Norwegian Maritime Authority (NMA) (2017) Regulations of 13 June 2000 no. 660 on the Construction, Operation, Equipment and Surveys of Fishing Vessels of 15 M in overall Length (LOA) and Upwards, 2000).
<https://www.sdir.no/en/shipping/legislation/regulations/construction-operation-equipment-and-surveys-of-fishing-vessels-15-m-in-overall-length-loa-and-over/>
- Norwegian ministry of foreign affairs. (2017). *the fight against illegal fishing can be won*.<https://www.norway.no/en/usa/norway-usa/news-and-events/washington/news2/the-fight-against-illegal-fishing-can-be-won/>
- Okes, N. C., Petersen, S., McDaid, L., & Basson, J. (2012). Enabling people to create change: Capacity building for Ecosystem Approach to Fisheries (EAF) implementation in Southern Africa. *Marine Policy*, 36(1), 286–296.
- Palma, M. A., Tsamenyi, M., & Edeson, W. (2010). *Promoting sustainable fishing: The international legal and policy framework to combat illegal, unreported and unregulated fishing*. Boston: Martinus Nojhoff.
- PEW. (2013). *Illegal, unreported, and unregulated fishing*. <https://www.pewtrusts.org/en/research-and-analysis/fact-sheets/2013/08/27/faq-illegal-unreported-and-unregulated-fishing>

- Phakathi, B. (2019). *SA joins forces with Namibia to tackle illegal fishing*.
<https://www.businesslive.co.za/bd/national/2019-01-24-sa-joins-forces-with-namibia-to-tackle-illegal-fishing/>
- Potgieter, T., & Pommerin, R. (2009). *Maritime security in southern African waters*, African SUN Media. Stellenbosch.
- Raemaekers, S. (2009). Rethinking South Africa's small-scale fisheries management paradigm and governance approach: Evidence from the Eastern Cape [Ph.D. Thesis]. Rhodes University, South Africa.
- Raemaekers, S., Hauck, M., Bürgener, M., Mackenzie, A., Maharaj, G., Plagányi, É. E., & Britz, P. J. (2011). Review of the causes of the rise of the illegal South African abalone fishery and consequent closure of the rights-based fishery. *Ocean and Coastal Management*, 54(6), 433–445. <https://doi.org/10.1016/j.ocecoaman.2011.02.001>
- Rajah, V. (2019, analysing the WWF case in the context of environmental justice in South Africa. *Human Rights Pulse*.
<https://www.humanrightspulse.com/mastercontentblog/analysing-the-wwf-case-in-the-context-of-environmental-justice-in-south-africa>
- Rose, G., & Milligan, B. (2010). Law for the Management of Antarctic Marine Living Resources: From Normative Conflicts towards Integrated Governance? *Yearbook of International Environmental Law*, 20(1), 41–87. <https://doi.org/10.1093/yiel/20.1.41>
- SADC. (2006). *Southern African development community: Protocol on fisheries 1996*.
https://www.sadc.int/files/8214/7306/3295/SADC_Protocol_on_Fisheries.pdf
- Sarah M. Glaser, Paige M. Roberts, & Kaija J. Hurlburt. (2019). Foreign Illegal, Unreported, and Unregulated Fishing in Somali Waters Perpetuates Conflict. *Frontiers in Marine Science*, 6. <https://doi.org/10.3389/fmars.2019.00704>
- Sodik, D. M. (2008). Non-Legally Binding International Fisheries Instruments and Measures to Combat Illegal, Unreported and Unregulated Fishing. *Australian International Law Journal*, 15(1), 129–164.
- Sjöstedt, M., & Sundström, A. (2013). Overfishing in southern Africa: A comparative account of regime effectiveness and national capacities. *Journal of Comparative Policy Analysis: Research and Practice*, 15(5), 415–431. <https://doi.org/10.1080/13876988.2013.835525>
- Sjöstedt, M., & Sundström, A. (2015). Coping with illegal fishing: An institutional account of success and failure in Namibia and South Africa. *Marine Policy*, 78–85. <https://doi.org/10.1016/j.biocon.2014.09.014>
- Sodik, D. (2009) Analysis of IUU fishing in Indonesia and the Indonesian legal framework reform for monitoring, control and surveillance of fishing vessels. *The International Journal of Marine and Coastal Law* 24, pp. 67–100. DOI: <https://doi.org/10.1163/157180808X353984>
- Sowman, M. (2006). Subsistence and small-scale fisheries in South Africa: A ten-year review. *Marine Policy*, 30(1), 60–73. <https://doi.org/10.1016/j.marpol.2005.06.014>
- Sowman, M., Sunde, J., Raemaekers, S., & Schultz, O. (2014). Fishing for equality: Policy for poverty alleviation for South Africa's small-scale fisheries. *Marine Policy*, 46, 31–42. <https://doi.org/10.1016/j.marpol.2013.12.005>

- Stop Illegal Fishing, SLF. (2016). *Norway and South Africa co-operating on stopping illegal and unlawful fishing*. <http://www.stopillegalfishing.com/press-links/norway-south-africa-co-operating-illegal-unlawful-fishing>
- Sundström Aksel. (2013). Corruption in the commons: Why bribery hampers enforcement of environmental regulations in South African fisheries. *International Journal of the Commons*, 7(2), 454. DOI: <http://doi.org/10.18352/ijc.370>
- Sumaila, U.R., J. Alder, and H. Keith. 2006. "Global Scope and Economics of Illegal Fishing." *Marine Policy* 30 (6): 696–703. doi:10.1016/j.marpol.2005.11.001.
- Swan, J. (2004). International Action and Responses by Regional Fishery Bodies or Arrangements to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing. *FAO FISHERIES CIRCULAR*, 996.URL: <http://epub.sub.uni-hamburg.de/epub/volltexte/2009/669/>
- Tanci, T. (2009). *Introducing vessel monitoring system in the commercial traditional line fish sector in South Africa*. <https://www.grocentre.is/static/gro/publication/215/document/tanci09prf.pdf>
- Thomson, D. B., & Farmhouse, B. (1984). Fishermen and fisheries management. *Expert Consultation on the Regulation of Fishing Effort (Fishing Mortality)*. *FAO Fisheries Report*, 289, 21-39. <http://hdl.handle.net/10535/8031>
- Tilney, R., & Purves, M. G. (1999). *The status of integrated monitoring fisheries monitoring in South Africa in proceeding of the International conference on Integrated Fisheries Monitoring*, pp.343-356 FAO, Rome.
- Tonne, A. S. (2018). Port state measures to combat IUU fishing, from the law of the sea convention to the FAO port state measures agreement. [PhD Thesis] <https://munin.uit.no/bitstream/handle/10037/17576/thesis.pdf?sequence=2>
- UN (1995) Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, https://www.un.org/Depts/los/convention_agreements/texts/fish_stocks_agreement/CON_F164_37.htm
- United Nation (UN). (1982). *United Nations Convention on the Law of the Sea, 1982*. https://www.un.org/Depts/los/convention_agreements/texts/unclos/unclos_e.pdf
- UN. (2019, 11 01). Divisions for Oceans Affairs and the Law of the Sea. *Law of the Sea Bulletin*. http://www.un.org/Depts/los/convention_agreements/convention_overview_fish_stocks.htm
- Ventura, V. A. M. F. (2015). Tackling Illegal, Unregulated and Unreported Fishing: The ITLOS Advisory Opinion on Flag State Responsibility for IUU Fishing and the Principle of Due Diligence. *Braz. J. Int'l L.*, 12, 50.
- Van As, H. (2019). The link between marine living resources & organised crime-you will be surprised! *Servamus Community-Based Safety and Security Magazine*, 112(6), 25-27. <https://hdl.handle.net/10520/EJC-16130f587c>

- Van der Marel, E. (2019). Problems and progress in combating IUU fishing "strengthening international fisheries law in an era of changing oceans. DOI: [10.5040/9781509923373.ch-013](https://doi.org/10.5040/9781509923373.ch-013) *Oxford Hart*, 291-318.
- Vrancken, P., Witbooi, E., & Glazewski, J. (2019). Introduction and overview: Transnational organised fisheries crime. *Marine Policy*, 105, 116–122. <https://doi.org/10.1016/j.marpol.2018.12.016>
- Witbooi, E. (2006). Law and fisheries reform: Legislative and policy developments in South African fisheries over the decade 1994–2004. *Marine Policy*, 30(1), 30–42. <https://doi.org/10.1016/j.marpol.2005.06.005>
- Witwatersrand University. (2020). *Research support: Research methodology*. <https://libguides.wits.ac.za/c.php?g=693518&p=4914910>
- Yadava, Y. S. (2008). MCS in small-scale fisheries regulating the unregulated. https://bobpigo.org/html_site/bbn/march-june08/March-June2008-Pages1-52.pdf
- Zacharias, M., & Ardon, J. (2019). *Marine policy: An introduction to governance and international law of the oceans*. New York: Routledge.

LIST OF LEGISLATION

Constitution of the Republic of South Africa, (Act 108 of 1996)

Marine Living Resource Act (MLRA) 1998

National Environmental Management 1998

Criminal Procedure Act 1977